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OCTOBER TERM, 1967

No. 851

PACIFIC SCIENTIFIC COMPANY,
Petitioner,

vs.

AEROTEC INDUSTRIES OF CALIFORNIA,
AEROTEC INDUSTRIES, INC., and
UNIVERSAL OIL PRODUCTS COMPANY,
Respondents.

PETITION FOR A WRIT OF CERTIORARI
to the United States Court of Appeals for the Ninth Circuit

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PETITION FOR A WRIT OF CERTIORARI
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PACIFIC SCIENTIFIC COMPANY prays that a writ of certiorari issue to review the judgment entered in this case on July 26, 1967, by the United States Court of Appeals for the Ninth Circuit, which reversed the judgment of the United States District Court for the Southern District of California, Central Division, entered August 3, 1965.

OPINIONS BELOW

The opinion of the district court (C.T. 895),[1] printed herein together with the interlocutory judgment, findings of fact and conclusions of law (C.T. 928, 944) of that court in Appendix B, infra, at pp. 3-33, is reported at 243 F.Supp. 390. The opinion of the court of appeals (R. 4-15), printed in Appendix B, infra, at pp. 34-50, is reported at 381 F.2d 795.

JURISDICTION

The judgment of the court of appeals was rendered and entered on July 26, 1967. Petitioner's timely petition for rehearing was denied August 31, 1967 (R. 17). The jurisdiction of this Court is invoked under section 1254 of Title 28 of the United States Code.

QUESTIONS PRESENTED

1. Whether the words "subject matter sought to be patented" and the "art to which said subject matter

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[1]References herein to the record are as follows:
"A. (page number)" refers to pages of the Appendices to this petition.
"C.T. (page number)" refers to pages of the clerk's transcript from the district court, which comprises Volumes Two through Eight of the record in this Court.
"R. (page number)" refers to pages of the transcript of proceedings in the court of appeals, which comprises Volume One of the record in this Court.
"R.T. (page number)" refers to pages of the reporter's transcript from the district court, which comprises Volumes Nine through Twenty-Six of the record in this Court.

pertains'' in the 1952 revision of the patent laws (35 U.S.C. 103) mean the combination of purpose, problem and inventive solution, and the art to which that combination pertains, as suggested by this Court prior to the enactment of section 103 in *Hotchkiss v. Greenwood* (1851) 11 How. (52 U.S.) 248, 267,[2] and *Potts v. Creager* (1895) 155 U.S. 597, 606, and as recently held by the Court of Customs and Patent Appeals[3] and by various district courts,[4] or whether they mean specific mechanical elements or functions without regard to either the purpose to which for the first time they are put by the patentee or the business to which the patent specifically applies, as held by the court below.

2. Whether the court below erred in holding, as a result of its aforesaid interpretation of section 103 (35 U.S.C. 103), Claims 7 and 9 of Pfankuch Patent No. 2,845,233 and Claims 1 and 5 of Cushman Patent No. 2,845,234 to be invalid, reversing the findings and judgment of the district court and the holding of the Patent Office to the contrary.

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[2]In 1966 this Court specifically held that section 103 "was intended merely as a codification of judicial precedents embracing the *Hotchkiss* condit n" (*Graham v. John Deere Co.* (1966) 383 U.S. 1, 17).

[3]*Application of Van Wanderham* (C.C.P.A. 1967) 378 F.2d 981; *Application of Legator* (C.C.P.A. 1965) 352 F.2d 377; *Application of Fay* (C.C.P.A. 1965) 347 F.2d 597.

[4]*Blake v. Bassick Company* (N.D.Ill. 1967) 262 F.Supp. 910; *Printing Plate Supply Co. v. Crescent Engraving Co.* (W.D. Mich. 1965) 246 F.Supp. 654.

3. Whether, despite Rule 52 of the Federal Rules of Civil Procedure, the court erred in reversing the district court's judgment based upon the latter's finding of non-obviousness to one skilled in the art of safety apparatus, where all the evidence of witnesses skilled in the art of safety apparatus, and all the historical evidence in the development of that art, supported the finding and there was nothing but theoretical, hindsight speculation to the contrary.

STATUTES INVOLVED

The case directly concerns the interpretation of section 103 of Title 35 of the United States Code, which provides:

> "§ 103. Conditions for patentability; non-obvious subject matter
>
> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made. July 19, 1952, c. 950, § 1, 66 Stat. 798."

Also involved in the case are: Article I, section 8, of the United States Constitution; 35 U.S.C. 101, 102 and 282; and Rule 52 of the Federal Rules of Civil Procedure; the

pertinent portions of which are set forth in Appendix A, infra, at pp. 1-2.

STATEMENT OF THE CASE

Before the development of the patented devices in issue, the only safety devices for airplane pilots and personnel which were known and in use had a serious and literally fatal defect; they worked reliably only if the airplane crashed while moving dead ahead or substantially so. If the airplane crashed while skidding or falling sideways, or ground-looping, for example, the devices in many cases would not operate and the pilot or passenger would be thrown from his seat and killed or injured (R.T. 271-272). At the urgent request of the armed forces, petitioner set about finding the answer (R.T. 271-272).

The problem was compound; any device had to allow for all normal movements of the pilot in operating the controls, yet had to lock *instantly* in case of a crash or other jolt which might fling the pilot from his seat.

Two employees of petitioner, Pfankuch and Wrighton, developed the answer embodied in Pfankuch Patent No. 2,845,233 (Exh. 1; now assigned to petitioner—Exh. 3; R.T. 24). They attacked the problem from a new angle: to develop a device which would operate in response to the motion of the man relative to his seat, though allowing him full freedom of normal movement—in contrast to all earlier devices which operated in response to the motion (sudden deceleration) of the vehicle itself. The patented device, in brief and simplified terms, is an apparatus to be attached to the back of the seat, with principal com-

ponents as follows: a self-rewinding reel for holding a strap passing over the back of the seat and fastened to a harness worn by the pilot;[5] a weighted flywheel or inertia member coupled to the reel in such a way that the two rotate in synchronism for normal movements of the pilot; but in the event of an abnormal movement of the pilot as a result of a crash or the like, the inertia member gets out of synchronism and causes a tooth on the reel to engage a pawl, thus instantaneously locking the reel against further turning.

Cushman, another employee of petitioner, and Wrighton developed an improvement embodied in Cushman Patent No. 2,845,234 (Exh. 2; assigned to petitioner—Exh. 4; R.T. 24), which also operates in response to the motion of the man relative to his seat. A ratchet wheel is used as the inertia member, and it moves with the reel under normal movements of the pilot. In the event of a sudden jerk upon the strap and abnormal acceleration of the reel due to abnormal movement of the pilot, the inertia of the ratchet wheel causes it to get out of synchronism with the reel. This triggers a mechanism that locks the reel.

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[5]We use "pilot" as an exemplar; the device works equally for other airplane personnel or passengers, or for the driver of or passenger in an automobile.

The opening words of the Pfankuch patent are:

> "This invention relates, generally, to novel safety apparatus for use by pilots, operators, and other crew members, such as bombardiers, navigators, gunners, etc. of rapidly moving vehicles such as aircraft and automobiles and, more particularly, to novel inertia-operated apparatus for use with body harnesses which apparatus automatically functions to safely retain the pilots in their seats during crashes and the like" (Exh. 1; R.T. 24).

In examining the patent applications and in discussing with the applicants the wording and rewording of the patent claims, the Patent Office considered a number of prior patents (Exhs. 131, 132; R.T. 1080):

> The 1946 patent to Geohegan (owned by the United States Government), the 1948 and 1955 patents to Nordmark (owned by American Seating Company), and the 1955 patent to Heinemann (owned by Douglas Aircraft Company) covering the earlier pilot-safety apparatus. These operated, not by sudden acceleration of a reel to which the pilot's harness was attached (i.e., responsive to acceleration of movement of the pilot's body away from the seat), but by a weighted pendulum device or weighted locking member, which would swing forward and cause locking of the reel in the event of a sudden deceleration of the airplane. In other words, the essence of the devices was that deceleration of the vehicle was the operating factor, rather than acceleration or movement of the pilot or passenger relative to his seat; and generally they operated only if the plane or vehicle crashed dead ahead or substantially so.[6]

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[6]The only pilot-safety apparatus that achieved substantial commercial acceptance prior to petitioner's devices (after embryonic fixed harnesses which allowed the pilot no freedom of movement) was that of the 1948 Nordmark patent, which was manufactured by American Seating Company (R.T. 204-205, 224). This device operated only if the airplane crashed substantially dead ahead. In its efforts to develop a device that would respond to multidirectional crashes, American Seating Company developed the apparatus of its 1955 Nordmark patent and a somewhat similar electric device. Neither of these devices was accepted by the trade to any significant extent (R.T. 208); American Seating turned instead to licenses of petitioner's devices.

The 1912 Scheuer and 1919 Caouette patents for fire-escape-ladder-retarding devices. These devices would permit the fire-escape ladder to swing downward at a certain limited rate when a person or persons stepped down upon the ladder; but if, for example, a pell-mell rush by a number of people made the ladder drop too rapidly, with danger of injury, a centrifugally motivated fly-ball speed-governor would limit the rate of descent. These devices operated, not upon the rate of acceleration of the ladder rope, but strictly upon the velocity of its unreeling.

The 1930 Foss, the 1943 Rutledge, and the 1911 (British) Plevins patents for fishing reels. These devices were not to lock upon acceleration of the playout from the reel, but rather to retard rotation of the reel so that it would not outrun the playout of the line and cause entanglement of the line. This was achieved by use of a centrifugal governor or a friction brake—either of which merely applied a drag on the reel so as to prevent too rapid rotation when the pull on the line was slowing down.

A 1945 Sharpe patent for a snubbing device to prevent a cow from kicking over the milk pail. This consisted of a drum, around which was wound a rope hooked to the cow's hind leg. One end of the axle of the drum was held at the top of a slot by a spring, which held the drum in place so long as the cow moved gently. But if the cow started to kick, the sudden jerk overcame the tension of the spring, and

pulled the drum downward, where a projection on the drum would catch upon the frame in which the drum was held and prevent further rotation.

A 1951 Trouin patent covering a device for braking and eventually stopping the fall of a person in space, such as builders, firemen, mountaineers, etc. When the cable drum rotated above a designated speed, a roller which was coupled to the cable drum and which normally followed the contour of a revolving cam began to lag, permitting a pawl to catch and lock a brake drum to the cable drum; rotation of the brake drum caused a progressive tightening of brake shoes around the cable drum until the latter was brought to a stop.

In the light of these references and discussions with the Patent Office, the applicants amended or abandoned certain claims and added and revised new claims. The two claims of Pfankuch that are in suit were rejected by the Patent Office examiner but they were subsequently allowed by the Board of Appeals. The final results were allowed by the Patent Office and the patents issued (Exhs. 131 and 132; R.T. 1080).

Commercial success followed promptly. Sales of the vehicle-responsive devices manufactured by the American Seating Company declined sharply (C.T. 705; R.T. 217). Ultimately American Seating Company took a license from plaintiff (Exh. 17; R.T. 38) and manufactured and sold its own devices centered about the essential solution achieved by the Pfankuch and Cushman patents (R.T. 211).

In 1956[7] respondents[8] bought four of petitioner's devices (R.T. 90). About a year later, Pfankuch demonstrated another of petitioner's models to a vice president of Aerotec Industries, Inc. (R.T. 285). Subsequently respondents canceled a large order for petitioner's devices, and then came on the market with their own devices (R.T. 131).

Respondents' devices are described by Spielman Patent No. 2,982,492 (Exh. 66; R.T. 433), filed October 30, 1958, and issued in 1961. These devices also use a reel with rewinding spring. If the unwinding of the reel is suddenly accelerated, two locking pawls are caused to pivot outward and engage teeth set around the inside of the reel housing. Respondents' devices, like those of petitioner, respond to the sudden acceleration of the seat occupant away from the seat, rather than to the deceleration of the vehicle as in the earlier Geohegan, Nordmark and Heinemann patents (C.T. 930, 933). All four models of respondents' devices contain all of the structural elements of each of the pertinent claims of petitioner's patents, in the same functional relationship (C.T. 932).

Petitioner brought this suit for infringement of its patents in the United States District Court for the Southern District of California, which has original jurisdiction under 28 U.S.C. 1338 (C.T. 2). Respondents urged

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[7]The Pfankuch and Cushman applications were filed February 10, 1953, and December 3, 1953, respectively; and the patents were issued July 29, 1958.

[8]Aerotec Industries of California was a wholly owned subsidiary of Aerotec Industries, Inc., which assumed any liability of the former herein. At the time of trial, these corporations had been merged into defendant Universal Oil Products Company, which was made a party defendant by order of the court (C.T. 730).

that the prior art (Exh. D; R.T. 1292) precluded validity of petitioner's patents. In particular, respondents urged that the combination of the art of early patents for "trolley catchers" with the elements embodied in the Geohegan, Heinemann and American Seating Company patents eliminated any "invention" in the petitioner's products.[9]

The trolley-catcher patents (Fairchild, issued in 1900; Ham, 1902; Burdon, 1908; Porter, 1914; Ricketts, 1921) depicted a series of devices for catching an up-swinging trolley when it jumped the trolley wire. In Ham, for example, an apparatus affixed to the rear of the vehicle contained a reel, holding a cable fastened to the end of the trolley. The trolley was held in contact with the wire, despite varying intervals of distance from the vehicle itself, by a spring which would propel the trolley upward if contact with the wire were lost, thus endangering overhead wires and supports. In such event, the inertia of a particular part, relative to the sudden pull on the cable and acceleration of the reel, would cause a pawl to catch in teeth around the circumference of the housing and halt rotation of the reel. The other trolley-catcher devices also used reels and locking pawls in somewhat similar arrangements.

The trolley-catcher devices, of course, had nothing to do with the speed of the vehicle, or with problems of collision or of passengers being thrown from their seats. Nor did they deal with an inertial force generated by

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[9]In obtaining the patent for their own safety apparatus, respondents, though required to call attention to any pertinent prior-art patents, made no reference to any trolley-catcher patent (C.T. 937).

change of speed of the vehicle; the force involved was that generated by the trolley spring, wholly independently of the speed and direction of the vehicle.

The district court held the petitioner's patents valid and infringed (A. 28). Having the evidence (including extensive testimony of witnesses working in the art of pilot-safety aparatus—R.T. 218, 222, 276, 351, 449, 1735-1736) and the prior patents before it, the court found as a fact that the subject matter of the patents was not obvious to one skilled in the art (A. 23, 26).

Respondents appealed. The court of appeals reversed, holding the patents invalid in view of the "prior art" of (1) the Sharpe patent (the snubbing device for keeping cows from kicking), (2) the Geohegan, Nordmark and Heinemann patents for safety harnesses, and (3) the trolley-catcher patents. In particular, the court of appeals purported to "read" one of the claims of the Pfankuch patent upon the Ham trolley-catcher device (R. 11-12).

As its opinion shows, the court of appeals based its conclusion upon the concepts that (1) any reference cited by the Patent Office, or any uncited reference having similar mechanical elements, is pertinent prior art and therefore pro tanto anticipatory of the patented device in issue, and (2) in ascertaining whether or not the inventions would have been obvious to one skilled in the art, the court need not ascertain or be bound by the arts to which those actually working in the field at the time would have been reasonably expected to look, or did in fact look, for a solution to the problem of saving the lives that were being lost in airplane crashes, but rather the

court may consider patents from virtually any art that might in theory be adapted and modified to achieve the same result, even though such art does not relate to the patented subject matter as a whole.

REASONS FOR GRANTING THE WRIT

1. THE DECISION OF THE COURT BELOW IS IN CONFLICT WITH DECISIONS OF THE COURT OF CUSTOMS AND PATENT APPEALS AND OF VARIOUS DISTRICT COURTS, AND IS INCONSISTENT WITH THE PRIOR SUGGESTIONS OF THIS COURT IN HOTCHKISS v. GREENWOOD (1851) 11 HOW. (52 U.S.) 248, AND POTTS v. CREAGER (1895) 155 U.S. 597.

The holding of the court below, in reversing the findings and judgment of the district court and the determination of the Patent Office, did so on the bases that (1) the subject matter of the patents was only the device, with regard to its component elements and their mechanical functions and disregarding the purpose for which the device was developed and the theretofore-unsolved problem which it answered, and (2) that the "art to which said subject matter pertains" was the art of reeling devices rather than the art of pilot-safety apparatus.

A number of recent cases have held the contrary: that the subject matter of the patent, as a whole, means and includes the entire and precise matter which the patent embraces, including the purpose which the device serves, and what it accomplishes in the context of that purpose. By way of corollary, they have held that the pertinent art is the art of the field or business to which that purpose pertains, and that the reference to "a person having ordinary skill in the art to which said subject matter per-

tains'' means a person skilled in that art and not in all arts.

The essence of this divergence is clear from an analysis of what an inventor does and what his patent covers.

In pragmatic terms, every invention and every inventive process includes (1) an object or purpose to be fulfilled, (2) discovery or recognition of the problem(s) or obstacle(s) to be overcome, and (3) the solution, which is expressed in a tangible device or process. These three elements in combination define the invention and are the subject matter. Omission of any one of them distorts the character and effect of the inventor's work and what he has contributed to scientific progress. Reading of any typical patent reveals the purpose and the solution-device plainly stated, with the problem either expressed, or implicit in the statement of the solution.

These fundamentals are plainly illustrated in the case at bar:

Here, would-be inventors set to work to solve the unsolved problem of pilot's safety apparatus—to make a device which will lock up surely and instantaneously whether the plane crashes head-on, sideways, upside down, or any variant or combination of the three. They solved the problem with the devices described in the Pfankuch and Cushman patents. It required two years' intensive effort (R.T. 279). The objective was an old one; for many years it had lain beyond the reach of inventors until Pfankuch, et al., went to work upon it. The Geohegan, Nordmark and Heinemann patents had not achieved the objective (R.T. 207, 220).

Analyzing the subject matter of these earlier patents: The purpose, of course, was the protection of pilots from death or injury. The problem, as the previous experts had seen it, was to develop a device which would allow the pilot free movement under normal conditions, yet would react immediately to *abnormal deceleration of the airplane.* Their solution was a harness, self-rewinding reel, locking pawls and teeth, pendulum activated by inertia relative to movement of the *airplane.*

Pfankuch, et al., had the same purpose—to protect pilots from death or injury. But the problem, as they saw it for the first time, was to develop an apparatus which would allow the pilot the same normal movements, yet would react immediately to *abnormal acceleration of pilot movement* relative to his seat. They solved it with a harness, self-rewinding reel, locking pawl and teeth, and a flywheel device activated by inertia relative to the *reel.* The invention was: a new discovery of the inherent nature of the problem that needed to be solved, and a new device that effectively solved it. Clearly there was invention; for the first time there was an effective apparatus that could allow pilots all the freedom to perform their functions, but would lock them in immediately no matter in what direction the airplane might crash.[10]

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[10]Clear demonstration appears in the soaring sales of petitioner's device, and the sharply declining sales of the earlier devices (C.T. 705; R.T. 217). Cf. *Eibel Co. v. Paper Co.* (1923) 261 U.S. 45, 56 ("very weighty evidence"); *Reiner v. I. Leon Co.* (2 Cir. 1960) 285 F.2d 501, 503, certiorari denied (1961) 366 U.S. 929; *Lyon v. Bausch & Lomb Optical Co.* (2 Cir. 1955) 224 F.2d 530, 535; *Printing Plate Supply Co. v. Crescent Engraving Co.* (W.D.Mich. 1965) 246 F.Supp. 654, 663.

The reason why the court below did not recognize this is clear from its opinion: Among various patents, some of which had been cited during the discussions with the Patent Office and some of which were discovered later, the court found elements of the *device* and elements of the mechanical *problem;* to the court the "art" was the art of reeling devices and in consequence these patents anticipated, severally or in combination, the Pfankuch and Cushman patents. It made no difference to the court that the patents it relied upon (except the earlier pilot-safety patents which failed to recognize the real problem and hence failed of their ultimate purpose) were for different uses and purposes; nonetheless, the court concluded anticipation or obviousness or perhaps both.[11] To the extent that this conclusion deals with obviousness under section 103, the holding means that to an ordinarily skilled person working with the problem of keeping airplane pilots from crashing into the instrument panel or sides or ceiling of the plane, the solution to his problem would be obvious from the brakes on fishing reels or the locks on up-swinging trolleys, because these all belong to the "subject matter" and "art" of reeling devices.

In the court's view, the real purpose and effect of the inventor's work—to save pilots' lives—were immaterial.

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[11] As appears below, the court seems to have confused these two, at least to some extent. Anticipation is the problem inherent in section 102, and denotes substantial identity of the later and earlier patent disclosures; the court reached for such identity with the Ham trolley-catcher patent by leaving out significant parts of the claims it recited for the purpose (infra, p. 31).

When the court defined the purpose—the court's own word—of the patents in suit, it saw only a function of specific elements of the final device: "to provide, in a spring rewound reel, free movement of the cord from the reel under a normal load, plus locking under unusual acceleration" (A. 47).[12] Carried to its logical conclusion, this concept would render any mechanical device unpatentable.

In direct conflict with the decision below, both as to the inseparability of purpose from the subject matter of the patent and as to the identification of the pertinent art with the context of that purpose, are a number of recent decisions:

> *Application of Van Wanderham* (C.C.P.A. 1967) 378 F.2d 981—patent for method of stabilizing flow of cryogenic liquid rocket fuel to rocket engine. The problem was discovered to be the formation of a vapor film between the flowing liquid and the inner surface of the conduit, which inhibited rapid cooling of the conduit and stabilization of the flow. Solution: a plastic coating on the conduit walls, which paradoxically speeded the cooling by preventing formation of the vapor film. Cited as "prior art": an

[12]The reel and cord, of course, were merely elements of the solution which Pfankuch and Cushman adopted to fulfill their purpose. For all the court could know, they might have found a solution in mechanical arms to grab the pilot, or a lasso that would drop around him, rather than a permanently worn harness attached to a reel. The latter was not the "purpose" of the patent at all.

article explaining a Japanese method of ensuring uniform hardening of steel cutlery when immersed in quenching liquid. There, likewise, the problem was discovered to be the formation of a vapor film which inhibited immediate transfer of heat from the metal to the liquid; the solution was found to be a plastic coating made of powdered razor whetstone and water.

The court (reversing the Patent Office) held the patent valid. It said (378 F.2d 986):

> "Here * * * two aspects of the requirements of section 103 are presented for our consideration: first, what is the invention as a whole for which the patent is sought; and second, who is the person of ordinary skill in this art. As pointed out, supra, we find appellants' invention to be a cryogenic liquid propellant flow system.
>
> "The second aspect of section 103 is not easily resolved. Appellants are of course not charged with the teachings in all arts. Where is the dividing line? The Supreme Court in Potts v. Creager, 155 U.S. 597, 15 S.Ct. 194, 39 L.Ed. 275 (1895), applied the doctrine of nonanalogous art to references cited therein in upholding the validity of the patents in suit. According to the Court's opinion, 155 U.S. at 606, 15 S.Ct. at 198:
>
> > 'What, then did the patentees do? They took the cylinder shown in the Creager wood-polishing exhibit, removed the glass bars, and substituted bars of steel, provided it with an abutting surface in the form of a revolving roller, and used it for a totally distinct and different purpose. * * *'
>
> In *Potts* the reference related to a wood polishing machine and the invention related to a machine 'to disintegrate and pulverize' clay."

In *Van Wanderham* the Patent Office examiner, however, had conceived the "art" ("a person having ordinary skill in the art") as the art of heat transfer:

> "In his view, the 'person having ordinary skill in the art' would be one skilled in heat transfer and appellants' 'invention' would be obvious to him once the Sato [Japanese cutlery] article was called to his attention. The board agreed with the examiner. * * * According to the solicitor, the invention relates to a cryogenic liquid propellant flow system and the issue here is whether appellants would be expected, in view of section 103, to turn to the art of quenching steel" (378 F.2d 985).

The court agreed with the solicitor. It said (378 F.2d 988):

> "Appellants' invention is manifestly far removed from the art of manufacturing Japanese cutlery. Applying the test stated supra, in *Lobl*, it does not seem to us that one seeking to eliminate pump cavitation problems *and* the problem of vapor in cryogenic liquid propellant flow system would turn to the cutlery art.
>
> * * * * *
>
> "Our determination here is not without difficulty. *However, we think the difficulty arises from not considering the subject matter as a whole and instead focusing on the scientific principle involved, namely, the reduction of film boiling through the use of an insulator*" (emphasis added).

Thus in *Van Wanderham*, the court correctly interpreted "the subject matter of the patent as a whole" as embracing the purpose, and the pertinent "art" as

being the particular field of endeavor in which the inventor worked (i.e., again reflecting the purpose).

Blake v. Bassick Company (N.D.Ill. 1967) 262 F. Supp. 910—patent for furniture leveler using springs and "bouncing" (silicone) putty. Held nonobvious (and not mere adaptation) from prior patents for vehicle shock-absorbers using suspension springs and rubber, though both devices used containers in the form of a dashpot. The court held that the shock-absorber art was nonanalogous to the furniture-leveler art.

Printing Plate Supply Co. v. Crescent Engraving Co. (W.D.Mich. 1965) 246 F.Supp. 654—patents for making lightweight printing plate by backing the electrotype plate with a laminate of plastic, cheesecloth and perforated aluminum sheet; held not obvious from prior patent for perforated gasket-like layer in manufacture of abrasive articles such as grinding wheels, an art nonanalogous to the printing art.

Application of Legator (C.C.P.A. 1965) 352 F.2d 377—patent for use of acrolein as bactericide to combat slime-forming and corrosion-promoting microorganisms in waters used in paper manufacturing. Cited as "prior art": an article describing bactericidal effects of acrolein solutions as having possible therapeutic value as respiratory disinfectant (e.g., in treatment of tuberculosis). The court reversed the Patent Office's rejection of the patent, rejecting the contention that from the cited article it would "be

obvious to one of ordinary skill *in the paper manufacturing art* seeking to combat slime and corrosion-forming microorganisms to apply acrolein to the aqueous stream'' (emphasis added).

Application of Fay (C.C.P.A. 1965) 347 F.2d 597—patent for halocarbon additive to gasoline motor fuel, for control of premature ignition. Reversing the Patent Office's rejection of the patent, the court applied the obviousness test, not to a person skilled in all the arts of chemical reactions, but ''to the person skilled in the art of gasoline compounding'' (347 F.2d 600). In its discussion the court said (347 F.2d 599):

> ''In other words, it is necessary to consider the invention 'as a whole,' i.e., the mental conception of the invention as well as its embodiment in a particular composition of matter. 'A patentable invention is a mental result. * * * The * * * product is but its material reflex and embodiment.' Smith v. Nichols, 88 U.S. (21 Wall.) 112, 22 L.Ed. 566 (1874).''

Thus, the court recognized what the court of appeals in the case at bar did not: that the invention goes beyond the mere aggregation of physical parts and their inherent functions.

The foregoing cases, to some degree expressly and to some degree tacitly, recognize that the subject matter of the patent includes the purpose or use to which the invention is directed; and that the pertinent ''art'' is the defined field in which the invention lies and with which the inventor can be expected to be familiar, rather than some generalized ''art'' such as mechanics, chemistry, and the like.

In focusing the obviousness test upon reeling devices rather than upon the essential purpose and problem of pilot-safety apparatus, the decision below is also inconsistent with the prior declaration of this Court in *Hotchkiss v. Greenwood* (1851) 11 How. (52 U.S.) 248, repeated in *Graham v. John Deere Co.* (1966) 383 U.S. 11; that the test relates to the ingenuity and skill of "an ordinary mechanic acquainted with *the business*" (emphasis added) —which is, of course, the principle which has been translated into the 1952 statute (35 U.S.C. 103). The business here is the business of vehicle-occupant safety apparatus, not reels.

Similarly, in denying the achievement of invention because of prior patents for reel-braking or reel-locking devices in different and unrelated industries, the decision is inconsistent with the rule which this Court in *Potts v. Creager* (1895) 155 U.S. 597, expressed as follows:

> "What, then, did the patentees do? They took the cylinder shown in the Creager wood-polishing exhibit, removed the glass bars, and substituted bars of steel; provided it with an abutting surface in the form of a revolving roller, and used it for a totally distinct and different purpose. * * * where the alleged novelty consists in transferring a device from one branch of industry to another, the answer depends upon a variety of considerations. In such cases we are bound to inquire into the remoteness of relationship of the two industries; what alterations were necessary to adapt the device to its new use, and what the value of such adaptation has been to the new industry. If the new use be analogous to the former one, the court will undoubtedly be disposed to construe the patent more strictly, and to require clearer proof of

the exercise of the inventive faculty in adapting it to the new use—particularly if the device be one of minor importance in its new field of usefulness. On the other hand, if the transfer be to a branch of industry but remotely allied to the other, and the effect of such transfer has been to supersede other methods of doing the same work, the court will look with a less critical eye upon the means employed in making the transfer. Doubtless a patentee is entitled to every use of which his invention is susceptible, whether such use be known or unknown to him; but the person who has taken his device and, by improvements thereon, has adapted it to a different industry, may also draw to himself the quality of inventor" (155 U.S. 606).

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2. THE COURT BELOW HAS DECIDED IMPORTANT AND URGENT QUESTIONS OF FEDERAL LAW WHICH HAVE NOT BEEN BUT SHOULD BE SETTLED BY THIS COURT.

The Patent Act of 1952 has been in effect 15 years. Meanwhile, this Court has spoken only in the *Graham, Calmar-Colgate-Palmolive,* and *Adams*[13] trilogy, settling certain questions but leaving untouched the questions indicated above. Currently, the nation is in the midst of a technological revolution which promises to exceed the Industrial Revolution in its impact on history, geography, and every human value. Patent applications now flow into

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[13] *Graham v. John Deere Co.*, supra, 383 U.S. 1; the Cook Chemical duo *(Calmar, Inc. v. Cook Chemical Co.*, and *Colgate-Palmolive Co. v. Cook Chemical Co.* (1966) 383 U.S. 1); and *United States v. Adams* (1966) 383 U.S. 39.

the Patent Office at the rate of about 90,000 per year.[14] Every delay in the authoritative settlement of the issues discussed in this petition compounds the uncertainties now besetting inventors, manufacturers, commercial businesses, and the courts.

In *Graham* this Court established that section 103 "was intended merely as a codification of judicial precedents embracing the *Hotchkiss* condition, with congressional directions that inquiries into the obviousness of the subject matter sought to be patented are a prerequisite to patentability" (383 U.S. 17). As shown by the conflicts of decision recited above, there remains a substantial area of doubt and conflict which needs to be resolved, before the Patent Office and the courts have any sure guide to the conceptual limits of "subject matter" and pertinent and prior "art" in section 103. The questions are:

> Does the subject matter of the invention, which is to be determined as either obvious or nonobvious at the time of the invention, include only a component *device* which may be employed in solving the problem, or does it include the discovery and analysis of the *problem* itself, or does it additionally include the *result*—the fulfillment of the *purpose* or object which the inventor set out to accomplish?
>
> Is "the art to which said subject matter pertains," by which obviousness to a person having ordinary skill in that art is to be tested, the art of the business

[14] Applications filed during the 1967 fiscal year, 89,000; during the 1966 fiscal year, 93,000. Backlog of pending applications at end of fiscal 1967: 201,000 (Official Gazette of the United States Patent Office, Vol. 841, No. 3, p. 671).

or industry in which the inventor is working, as held in *Hotchkiss* and *Potts,* or some broader "art" embracing all applications of the mechanical elements and functions of the final device, as supposed by the court below?

May an appellate court overturn a fact finding of nonobviousness of the subject matter of an invention from the teaching of the prior art to a person having ordinary skill in the art to which the subject matter pertains, aided by the court's own hindsight knowledge and subjective consideration, and contrary to the facts of historical development and the expert testimony?

The rule needs to be settled by this Court that the "subject matter of the patent as a whole" and the "art to which the subject matter pertains" are to be defined in terms of the purpose or use of the invention as well as the components employed in the solution to the problem; moreover, that such purpose or use be recognized as the precise and entire purpose which the inventor sought to accomplish, not some truncated expression of purpose which recites only a particular function of some element of the device.

The difference dramatically appears in the case at bar. The purpose pursued by Pfankuch, et al., was to accomplish a means to hold pilots and other vehicle-occupants in their seats in the event of a crash, though permitting free movement at other times. The court below ignored this. As above stated, it defined the purpose as merely "to provide, in a spring rewound reel, free movement of

the cord from the reel under a normal load, plus locking under unusual acceleration" (A. 47).

Only by the rule urged above can the obviousness test of section 103 have a realistic and common-sense application and give effect to all of the purposes of the constitutional and statutory protection and encouragement of inventions.

Commentators agree that necessary questions have not yet been resolved. Professor Kitch, writing on *Graham* in "The Supreme Court Review 1966," pages 293-346, emphasized the need for further interpretation as foundation for determining the factual issues described by the court in *Graham:*

> "Although the resolution of these factual issues is often difficult, the issues themselves are reasonably clear. But underlying each of the three steps there is one central problem that has never really been faced: the meaning of the 'pertinent art.' This is a crucial issue because it plays a double role: it determines both the relevant prior subject matter and relevant level of skill. Nevertheless, it has barely been touched on in the cases or the secondary literature" (p. 336).

> "VI. THE COURT'S RESPONSIBILITY
>
> "*Deere, Adams,* and *Cook* are hopeful signs that the courts will begin to work out the implications of the non-obviousness test that have been ignored. If the courts begin to face and solve these analytic issues, the administration of § 103 should be made easier" (pp. 341-342).

The Reviser's Note to section 103 also indicates the expectation of more definite criteria:

> "This paragraph is added with the view that an explicit statement in the statute may have some stabilizing effect, and also to serve as a basis for the addition at a later time of some criteria which may be worked out" (35 U.S.C.A. 103, p. 715).[15]

Analysis of the statute makes it clear that "subject matter as a whole," "the [pertinent] art," and "prior art" are correlative terms; the scope of one determines the boundaries of the others. Their interpretation must be resolved before the factual inquiries outlined in *Graham* can begin. The lack of definitive interpretation by this Court accounts for the confused medley of decisions in the courts below, and for the misguided path and erroneous result below in the instant case.

We respectfully submit that this Court should make clear that the obviousness test of section 103 is satisfied by what one skilled in the particular field of his endeavor would know or reasonably investigate, rather than what one hypothetically skilled in every use and adaptation of a component mechanical principle or combination of mechanical elements would know or reasonably investigate.

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3. THE DECISION BELOW IS ERRONEOUS.

a. The decision misinterprets section 103 in deeming the pertinent art to be the mechanical elements, without

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[15] This note was incorporated in the committee reports accompanying the 1952 revision (S.Rept. 1979, June 27, 1952, U.S. Code, Congressional and Administrative News, 82d Cong., 2d Sess. 1952, Vol. 2, pp. 2394, 2410-2411; H.Rept. 1923, May 12, 1952, House Miscellaneous Reports III, 82d Cong., 2d Sess., pp. 1, 18).

regard to differences in purpose and use (sections 1 and 2 of this petition, supra).

b. The decision confuses Patent Office references with "pertinent art" (i.e., art to which the subject matter of the patent pertains) and "valid prior art" (A. 46). The office of "references" is to cite authority for the rejection of a claim by the Patent Office examiner on the basis of prior art; they must be "the best references at his command" (Rules of Practice in Patent Cases, Rule 106; 37 C.F.R. 1.106). The applicant may attempt to distinguish the references (Rule 111(b); 37 C.F.R. 1.111(b)), or he may amend his claims and show how the amendments avoid the references and render the claims, as amended, patentable (Rules 111(c) and 119; 37 C.F.R. 1.111(c), 1.119). This gives the applicant opportunity to develop the proper and allowable wording for his claims which define the scope of the invention. If the Patent Office then allows the amended claims and issues the patent, it has determined that the references do not prevent patentability (i.e., do not anticipate or show obviousness); and whether the cited art is valid (i.e., prior in time) or was at one time pertinent (i.e., in some way related to all or some part of the subject matter sought to be patented) is academic. The references have no further use (*Application of Stempel* (C.C.P.A. 1957) 241 F.2d 755, 760).

The case at bar illustrates these processes. In the proceedings concerning the Pfankuch application, after a considerable course of amending and adding claims in response to the examiner's rejections, the applicants asserted that the cow's-foot-snubbing device of the Sharpe patent is "an entirely non-analogous art" (Exh. 131, p.

67), and that the patents for fire escapes are "entirely foreign to applicants' safety apparatus" (Exh. 131, p. 68). The Board of Appeals agreed, stating that those patents are for a different purpose (Exh. 131, pp. 90, 91). Also, in the proceedings concerning the Cushman application, the applicants asserted that the fishing reel reference was "completely foreign to applicants' inertia operated safety device in object, construction, and manner of operation" (Exh. 132, p. 41). Thereafter the examiner allowed the claims under discussion (Exh. 132, pp. 46, 53).

These instances exemplify the common understanding that the mere citation by the Patent Office of a patent as a reference to be considered does not necessarily make it pertinent. The applicant may point out the error if the art is not pertinent. That was done here with respect to the snubbing device for cows, the fire-escape devices, and the fishing reels.

As respects the court's use of the term "valid prior art" ("And for the life of us we cannot see why the Sharpe patent, which is designed to keep a cow from kicking over the milk pail, is valid prior art if the trolley catchers are not" (A. 46)), to the court below this term seems to have meant a patent which, if cited, must necessarily be either prior pertinent art or prior art analogous to the pertinent art, all possible applications of which must ipso facto be obvious to a person ordinarily skilled in the art of pilot-safety devices. This is not the law. The question still ensues whether the cited patents lie in the pertinent art or analogous art, and this, as the court below observed, depends upon the similarity of elements

and purposes (A. 46). But having correctly so stated, the court forthwith undid the correctness of its approach by saying that the purpose of petitioner's patents was "to provide, in a spring rewound reel, free movement of the cord from the reel under a normal load, plus locking under unusual acceleration" (A. 47). Thus to limit the purpose of petitioner's patents to the function of certain components of the ultimate device, omitting all reference to and consideration of the paramount purpose of protecting pilots from injury in a crash, distorts reality. It would be like saying of the patent in *Van Wanderham*, supra, that its purpose was to put a plastic coating on metal rather than, as the court there recognized, to describe a method for stabilizing the flow of cryogenic rocket fuel to the engine.

c. The decision erroneously assumes that, because trolley-catcher, fishing-reel and fire-escape patents were of record in the Patent Office and because they involved stopping or slowing the unwinding of a reel under measured conditions, a Patent Office search would have shown to Pfankuch and Cushman not only what their technical problem was, but also their solution to the problem. "[T]he simple expedient of conducting a patent search" is cited as the answer (A. 47). Yet the trolley-catcher patents were not "discovered" by the Patent Office examiners, by petitioner, by respondents in their application for the Spielman patent, or by anyone connected with the case until long after the notice of infringement. Years of work by others in the pilot-safety apparatus field had failed to find the answer which Pfankuch and Cushman eventually found. In fact, there was nothing in the per-

tinent art of vehicle-occupant safety apparatus except the Geohegan, Nordmark and Heinemann patents, which used the entirely different approach of responding to behavior of the airplane rather than to movement of the pilot relative to his seat; and no other art so closely related as to suggest its devices to one ordinarily skilled in pilot-safety apparatus as the solution to his quest. No reference has been produced which contains the slightest suggestion to use what it discloses in combination with the elements or problems or purposes of any other. *Application of Adams* (C.C.P.A. 1966) 356 F.2d 998, 1002.

d. The decision erroneously declares that the trolley-catcher patents "anticipate" the Pfankuch and Cushman claims in suit (A. 49). This conclusion—essentially an application of section 102 to the issue—is arrived at by the expedient of reading a Pfankuch claim upon the Ham trolley-catcher patent (A. 44), *omitting the following key words:* "Safety apparatus for preventing a seat occupant of a vehicle from being thrown off his seat, comprising, etc. * * * whereby the seat occupant is permitted freedom of motion * * * due to a sudden force tending to dislodge the seat occupant * * * to retain the seat occupant in his seat * * *" (A. 34-35). These are essential elements of the claim; to omit them is distortion. Patent-invalidating anticipation under section 102 requires substantial identity of subject matter (*Monroe Auto Equipment Co. v. Heckethorn Mfg. & Sup. Co.* (6 Cir. 1964) 332 F.2d 406, 414).

e. The decision below contravenes the basic policy of the patent laws, as embodied in the Constitution and in the Code. Pfankuch, et al., did produce something new

which others working in the field had been unable to do;[16] something useful, calculated to effect a broader range of protection of pilots and other vehicle occupants from death or injury than had previously been achieved; and something that neither the Patent Office nor the trial court found to be obvious to a person having ordinary skill in the pertinent art. Reasonable reward and encouragement of such results are the essence of the patent law, constitutional and statutory (*Grant v. Raymond* (1832) 6 Pet. (31 U.S.) 218, 242; *Graham v. John Deere Co.* (1966) 383 U.S. 1, 9). Conversely, to accord Pfankuch et al. patent protection does not withdraw from the public domain anything which is already there (*Graham v. John Deere Co.*, supra, 383 U.S. 1, 6). The Pfankuch and Cushman patents do not prevent the continued manufacture and sale of cow's foot snubbers, fishing reels or trolley catchers.

f. The decision overrides the statutory presumption of patent validity (35 U.S.C. 282), and contravenes Rule 52 of the Federal Rules of Civil Procedure in not according binding force to trial court findings not clearly erroneous. To the court below, obviousness was an easy matter of hindsight, against which the courts have frequently cautioned (*Diamond Rubber Co. v. Consol. Tire Co.* (1911) 220 U.S. 428, 435; *Manville Boiler Co. v. Co-*

[16]A subsidiary, but important, new result of the advance in the art which flowed from the Pfankuch approach of making the device responsive to motion of the seat occupant relative to the seat rather than to deceleration of the vehicle, was the ability of the pilot to test the device on the ground and make sure of its dependability—an impossibility with the Geohegan, Nordmark and Heinemann devices, which responded only to abnormal deceleration of the plane.

lumbia Boiler Co. of Pottstown (4 Cir. 1959) 269 F.2d 600, 604, and cases cited; *Graham v. Jeoffroy Mfg.* (5 Cir. 1953) 206 F.2d 769, 772, and cases cited). But the statute (section 103) says, "obvious at the time the invention was made." The evidence was all the other way: inability of others to discover although long in the field; outstanding commercial success, supplanting less effective devices; nonregard of the trolley-catcher devices (upon which the court below most heavily relied) by the inventors, the Patent Office searchers, and the parties hereto throughout the period during which, if these devices had truly and obviously suggested the answer which everyone was looking for, the inventions in suit would have been developed long since.

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4. THE DECISION BELOW PRESENTS CONTINUING QUESTIONS UNDER THE PATENT LAWS.

The disorder of concepts and approaches among the various primary and intermediate courts presents a confusion of precedents for the future. Such uncertainties and conflicts will affect a great number of inventors, manufacturers, and commercial enterprises both sellers and purchasers. These uncertainties will continue to exist, and to engender litigation, until resolved by this Court. Clear understanding is essential both to the security of business transactions and to the administration of the patent laws.

CONCLUSION

For the foregoing reasons, this petition for a writ of certiorari should be granted.

Respectfully submitted,

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(Appendices Follow)

Appendix A

United States Constitution, Article I, section 8:

"The Congress shall have Power

* * * * *

"To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries; * * *."

35 U.S.C. 101:

"**§ 101. Inventions patentable**

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title. July 19, 1952, c. 950, § 1, 66 Stat. 797."

35 U.S.C. 102:

"**§ 102. Conditions for patentability; novelty and loss of right to patent**

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

* * * * *

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, * * *

* * * * *

"* * * July 19, 1952, c. 950, § 1, 66 Stat. 797."

35 U.S.C. 103:

"**§ 103. Conditions for patentability; non-obvious subject matter**

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made. July 19, 1952, c. 950, § 1, 66 Stat. 798."

35 U.S.C. 282:

"**§ 282. Presumption of validity; defenses**

A patent shall be presumed valid. The burden of establishing invalidity of a patent shall rest on a party asserting it.

* * * * * *

"* * * July 19, 1952, c. 950, § 1, 66 Stat. 812."

Federal Rules of Civil Procedure, Rule 52:

"In all actions tried upon the facts without a jury or with an advisory jury, the court shall find the facts specially and state separately its conclusions of law thereon, and judgment shall be entered pursuant to Rule 58; * * *. Findings of fact shall not be set aside unless clearly erroneous, and due regard shall be given to the opportunity of the trial court to judge of the credibility of the witnesses. * * * As amended Jan. 21, 1963, eff. July 1, 1963."

Appendix B

[C.T. 895]

United States District Court
For the Southern District of California
Central Division

No. 63-64-TC Civil

PACIFIC SCIENTIFIC COMPANY, a corporation,
Plaintiff,

vs.

AEROTEC INDUSTRIES OF CALIFORNIA, a corporation, AEROTEC INDUSTRIES, INC., a corporation, UNIVERSAL OIL PRODUCTS COMPANY, a corporation,
Defendants.

OPINION

This is an action for infringement of letters patent, arising under 35 U.S.C. § 281. Plaintiff seeks a permanent injunction, an accounting for profits, treble damages and attorneys' fees. Defendants, by way of counterclaim, seek judgment declaring plaintiff's patent invalid and not infringed.

Plaintiff Pacific Scientific Company owns letters patent Nos. 2,845,233 and 2,845,234 (referred to hereinafter as "233" and "234"), first issued to Leo A. Pfankuch, Clifford E. Cushman and Robert J. Wrighton. The inventors

assigned [C.T. 896] their patents to Sturgess, Inc. That firm later changed its name to Pacific Scientific Aero-products. The company subsequently merged with Pacific Scientific Company and by merger plaintiff became owner of the patents.

Defendant Aerotec Industries of California is a wholly-owned subsidiary of Aerotec Industries, Inc. By stipulation filed in this court, the parent company has assumed any liability that may be imposed upon the subsidiary. At the time of trial, Aerotec Industries, Inc., was a subsidiary of Universal Oil Products. Universal has been made a party defendant by order of the court.

The devices in question are safety reels and harnesses, intended primarily to protect seat occupants in aircraft; there is testimony they are adapted to use in other vehicles, and may be used in transporting freight.

The apparatus gives the seat occupant freedom to operate controls and to move about under ordinary conditions. However, in the event of an abnormal movement of the occupant, such as would occur in a crash or a violent maneuver of the aircraft, an inertia reel locks and prevents further movement of a strap out of a reel, thus holding the person securely in his seat.

Prior to 1950, the sole American manufacturer of inertia safety reels was American Seating Company. Its devices locked up in response to deceleration of the aircraft. In contrast, the apparatus with which we are concerned responds to acceleration of the seat occupant. As plaintiff succinctly states, earlier apparatus was vehicle-sensitive; the present devices are man-sensitive.

Plaintiff's predecessors in interest obtained their first patent (233) only after repeated rebuffs which [C.T. 897] need be discussed only briefly.

On the first application, the patent office rejected all 10 claims as being covered by prior patents. After this rejection the inventors added claims 11 and 12 which mentioned a separate inertia member. The examiner then rejected all claims, principally on the basis of an earlier acceleration-responsive device (Sharpe patent No. 2,370,921, a snubbing device for dairy cattle). A second amendment likewise was rejected. The inventors added, *inter alia,* claims 23 and 25 (now 7 and 9). On the basis of these amendments, the patent examiner held the Sharpe reference no longer applicable but held the claims were nevertheless unpatentable. The Patent Office Board of Appeals reversed the examiner and allowed these claims.

What is now patent 234 likewise was first rejected on the basis of prior art.

The four claims of plaintiff's patents which defendants are alleged to have infringed (claims 7 and 9 of patent 233 and claims 1 and 5 of patent 234) define a safety apparatus for preventing a seat occupant of a vehicle from being thrown from his seat; an inertia lock device adapted to be mounted on the back of the seat, including a reel, a flexible connector adapted to be coupled to the seat occupant and wound on the reel; an inertia member turnably movable with respect to the reel, means for coupling the inertia member with the reel, and locking means (or means for stopping rotation of the reel), with the inertia member being operable by inertia to cause the locking means to lock the flexible connector when that connector is pulled

outwardly from the housing by an abnormal movement of the seat occupant.

Patent 234 is an improvement over the basic [C.T. 898] patent 233. It has fewer moving parts. In 233, the entire assembly of the inertia reel must shift upward in the case in order to lock. In 234, locking is accomplished by pivoting and rotating of the parts. In the latter mechanism, the inertia mass has been combined with the locking member. Claims 1 and 5 of the improvement patent differ from the claims of the basic patent by defining the locking means as being operable in response to the relative rotation between the reel and the inertia member.

Defendants' safety device likewise is designed to allow the seat occupant normal movement unless emergency conditions accelerate a reel and engage a locking mechanism. The apparatus includes a rotatably mounted reel, a flexible connector or webbing going across the shoulders of the user and fastening into a lap belt, a rewind spring which lets the spool unwind when the user leans forward and wind when he moves back, locking dogs or pawls which function as inertia members, and springs to hold the pawls in place.

In the words of defendants' patent:

> "... The spool ... and locking pawls ... will remain in the relative positions ... up to a certain predetermined acceleration of the reel spool. ... Under these conditions the seat occupant will be thrown forward with the result that a sudden force is applied to the belt ... and the reel spool will be accelerated; at the same time, ... force is being applied to the locking pawls ... in a direction tending to have them rotate with the spool. However, inasmuch as the springs ...

> constitute the only couple between the pawls and the [C.T. 899] reel spool and inasmuch as the pawls have inertia and, hence, resist rotation with the spool at the assumed accelerated rate of rotation of the spool, the reel spool will turn relatively to the pawls. . . . the amount of movement of the reel spool necessary to project the locking pawls into locking position is enough to close the gap between the edges . . . of each of the grooves . . . and the adjacent edge of the locking pawls, so that, with the pawls in engagement with the locking teeth, rotation of the reel spool in an unwinding direction is positively prevented."

Defendants deny any infringement, and in addition set out six affirmative defenses: Invalidity of plaintiff's patent because of prior invention; invalidity of plaintiff's patent because of prior public use; the subject matter of the purported inventions would have been obvious to one skilled in the art; the claims are not sufficiently set forth in the patents; variance between the patent and the purported invention; estoppel of plaintiff to claim infringement. Defendants further urge there is a misjoinder of inventors. These matters will be discussed seriatim.

Relative to the question of infringement, defendants argue their device has a different mode of operation from plaintiff's in that the reel described in patent No. 233 requires a translation or upward movement of the drum assembly and defendants' reel does not; that defendants' device is unbalanced by having the locking pawl mounted eccentrically on the reel while plaintiff's device is balanced, and that plaintiff's device alone has a manual [C.T. 900] unlocking feature.

Defendants further urge that their device responds to velocity, while plaintiff's reel responds solely to acceleration. Another factor pointed out as distinguishing the two mechanisms is absence of a separate inertia element in defendants' apparatus.

The parties have devoted a large part of their testimony and their briefs to the question of what force activates (i.e., locks) each of the devices.

It is obvious the various forces discussed—acceleration, centrifugal force, and velocity—are interrelated. An object cannot reach a designated velocity without being accelerated. However, these factors are considered separately in the various analyses presented by the parties' expert witnesses. Key portions of their testimony on this question may be summarized thus:

> Howard M. Luttrell, design engineer for Pacific Scientific Company: the Aerotec device locks from a combination of centrifugal force and acceleration; it is impossible for the device to lock solely from velocity. Around 10 G's (10 times the force of gravity) locking is due almost entirely to acceleration. Below five G's the greater force is velocity. Plaintiff's devices are responsive solely to acceleration.
>
> James E. Clauser, director of engineering of plaintiff corporation: the Pacific Scientific devices "have been made intentionally to be as sensitive to acceleration only as possible." In the Aerotec device any sudden acceleration above a predetermined value causes a dog (pawl) to pivot and engage a locking

ring. Defendants' contention their device responds solely to velocity or to centrifugal force is "impossible." In [C.T. 901] a crash test at 47 miles per hour the Aerotec device locked 79½ per cent from acceleration. In defendants' device acceleration of the strap or harness causes the spool to move with angular velocity, and centrifugal force moves the pawls outward to locking position.

Leo E. Ay, a Pacific Scientific designer: in a test simulating a 47-miles-per-hour crash the Aerotec apparatus locked 80 per cent from acceleration and 20 percent from velocity.

Jerold L. Swedlow, a graduate student at California Institute of Technology, testifying for defendants: "I might point out that the motion or the terms 'velocity' and 'acceleration' are interconnected. That is, if you have a still body and you subject it to an acceleration, it will acquire velocity. On the other hand, if you have a still body, which you would like to impart some velocity to, you must accelerate it. But the forces, and in fact these motions, themselves, can be considered separately. So that although velocity and acceleration are tied, you can look at them one at a time if you were doing an engineering analysis." Acceleration would tend to move the locking pawl on the Aerotec device, but the pawl is blocked from so moving, and locking therefore is caused by centrifugal force. The Aerotec reel responds to velocity of the strap or harness.

Albert L. Gabriel, a patent attorney testifying for defendants: defendants' device is responsive to velocity or centrifugal force.

C. Norman Sjogren, president of Chemet Engineers, a rebuttal witness for plaintiff: acceleration is the [C.T. 902] major force causing defendants' device to lock. At a constant acceleration of one G, locking would be primarily from velocity, but this condition is not a normal one.

Careful examination of the testimony and of the exhibits persuades the court the distinction defendants seek to draw here is not a valid one, particularly in view of the terminology of defendants' patent describing their device as acceleration-operated.

The elements of teeth and pawls are reversed in plaintiff's and defendants' devices. This does not negate infringement.

In assailing the validity of plaintiff's patents, defendants cite as prior art three patents for trolley-catching devices (Ham patent No. 700,763, Burdon patent No. 888,418, Ricketts patent No. 1,393,570). These earlier patents apparently were not considered by the patent office in connection with plaintiff's devices.

Trolley catchers are heavy, bulky devices designed to withstand far less strain than that imposed on an aircraft safety reel; but this fact is inapposite in resolving the prior art question.

It is said that if the elements and purposes in one art are related and similar to those in another art, and

because by reason of that relation and similarity make an appeal to the mind of a person having mechanical skill and knowledge of the purposes of the other art, then such arts must be said to be analogous; and, if the converse be true, they are non-analogous arts. *Stearns v. Tinker & Rasor,* 220 F.2d 49 (9th Cir. 1955).

The Manual of Patent Office Examining Procedure **[C.T. 903]** (Section 904.01 c on page 155) sets out the rule thus:

> "Analogous Arts"
>
> "Not only must the art be searched with which the invention claimed is classifiable, but also all analogous arts regardless of where classified.
>
> "The determination of when arts are analogous is at times difficult. It depends upon the necessary essential function or utility of the subject matter covered by the claims, and not what it is called.
>
> "For example, a tea mixer and a concrete mixer are for the same art, namely, the mixing art, this being the necessary function of each. Similarly a brick-cutting machine and a biscuit-cutting machine have the same necessary function."

Even if we assume a relation and a similarity of elements in a safety reel and a trolley-catcher, the purposes of the two devices are unrelated within the rule above set forth.

The court finds plaintiff's devices were not anticipated by prior art, nor has protection of the invention been lost by reason of prior public use.

Subject matter of plaintiff's invention was not obvious to one skilled in the art. The fact is emphasized by the

ready acceptance of the man-sensitive safety reel by the military services and the aircraft industry, and by its high degree of commercial success.

The court finds the claims are sufficiently set forth in plaintiff's patents, and the claims adequately [C.T. 904] describe the devices sought to be patented.

On the issue of file wrapper estoppel as defendants seek to apply it herein, it is important to note the term "separate inertia element" has been used in two contexts. Both plaintiff's and defendants' devices have inertia elements *separate from the drum or reel,* not separate from the locking means. Apropos this distinction, the court finds there is no element of file wrapper estoppel.

The granting of letters patent raises a prima facie presumption the named persons were inventors of the patented devices. The burden is upon defendants to show otherwise by strong, clear, and convincing evidence. This, defendants have not accomplished.

The court finds plaintiff's patents are valid and infringed. It further finds plaintiff is entitled to an injunction against further infringement and to an accounting for profits; but plaintiff is not entitled to treble damages nor to attorneys' fees. 35 U.S.C. §§ 284, 285.

Counsel for plaintiff shall prepare and lodge proposed findings of fact, conclusions of law, and judgment.

Dated: This 12th day of July, 1965.

/s/ Thurmond Clarke
THURMOND CLARKE
UNITED STATES DISTRICT COURT JUDGE

[C.T. 944]

United States District Court
For the Southern District of California
Central Division

No. 63-64-TC Civil

PACIFIC SCIENTIFIC COMPANY, a corporation,
Plaintiff,

vs.

AEROTEC INDUSTRIES OF CALIFORNIA, a corporation, AEROTEC INDUSTRIES, INC., a corporation, UNIVERSAL OIL PRODUCTS COMPANY, a corporation,
Defendants.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

Upon trial being had in open court, with an opinion being filed on July 12, 1965, and for good cause shown, the Court hereby makes its findings of fact and conclusions of law as follows:

FINDINGS OF FACT

1. Plaintiff PACIFIC SCIENTIFIC COMPANY is a corporation organized and existing under the laws of the State of California and has a principal place of business in San Francisco, California.

2. Defendant AEROTEC INDUSTRIES OF CALIFORNIA was a corporation organized under the laws of the State of

California, having a principal place of business in Los Angeles County, California, and is now dissolved.

[C.T. 945] 3. Defendant AEROTEC INDUSTRIES, INC. was a corporation organized under the laws of the State of Connecticut and having a principal place of business in Greenwich, Connecticut, and was the successor to Aerotherm Corporation, a Connecticut corporation.

4. Defendant UNIVERSAL OIL PRODUCTS COMPANY is a corporation organized and existing under the laws of the State of Delaware, having a principal place of business in Des Plaines, Illinois, and is qualified as a foreign corporation to do business in the State of California.

5. Defendant AEROTEC INDUSTRIES, INC. by stipulation filed in this court, has assumed any liability that may be imposed upon defendant, AEROTEC INDUSTRIES OF CALIFORNIA.

6. Defendant AEROTEC INDUSTRIES, INC. has merged into UNIVERSAL OIL PRODUCTS COMPANY.

7. Defendant UNIVERSAL OIL PRODUCTS COMPANY was made a party defendant by order of the court pursuant to plaintiff's motion, and is now a party defendant.

8. This is an action arising under the patent laws of the United States, and this court has jurisdiction pursuant to 28 U.S.C. 1338.

9. On July 29, 1958, U. S. Letters Patents No. 2,845,233 and 2,845,234 were duly and legally issued to Pacific Scientific Aeroproducts, and plaintiff is now the owner of the Letters Patents by mesne assignments and has the right to bring this action for infringement thereof.

10. Defendants were notified two and one-half months prior to the issue date of the patents in suit that the patents in-suit were about to be issued with claims providing quite basic protection and that plaintiff did not feel that the market was large enough to warrant licensing another manufacturer to produce the safety apparatus (Pltf's. Ex. 42).

11. Defendants were promptly given actual notice as **[C.T. 946]** to the issuance of the aforesaid Letters Patents at the time they issued, and were charged with infringement of the Letters Patents at that time (Pltf's. Exs. 42 and 44).

12. The patented devices are safety apparatus for protecting a man in his seat consisting of an inertia reel adapted to be mounted on the back of a seat and connected to a shoulder strap or harness which is adapted to be coupled to the body of a seat occupant.

13. The patented apparatus is intended for use on moving vehicles carrying people, such as aircraft. The patented apparatus gives the occupant of a seat in the vehicle freedom to operate controls and to move about under ordinary conditions. However, in the event of abnormal movement of the seat occupant with respect to the seat, such as would occur in a crash or a violent maneuver of the aircraft, the inertia reel locks and prevents further movement of the strap out of the reel, thus holding the occupant securely in his seat.

14. Prior to the development of plaintiff's safety apparatus, the sole American manufacturer of such apparatus was American Seating Company. Its devices re-

sponded to deceleration of the aircraft and hence were vehicle-sensitive and the response was unidirectional. The patented apparatus responds to abnormal movement or acceleration of the occupant of a seat with respect to the seat and hence is man-sensitive and the response is multi-directional.

15. Prior to the development of plaintiff's man-sensitive safety apparatus, the lives of Air Force pilots were being lost because of the deficiencies of the prior art vehicle-sensitive apparatus.

16. Plaintiff's man-sensitive safety apparatus overcame the deficiencies of the prior art vehicle-sensitive safety apparatus and represents a substantial contribution to science.

[C.T. 947] 17. The application for plaintiff's basic patent No. 2,845,233 was filed on February 10, 1953, and the application for plaintiff's improvement patent No. 2,845,234 was filed on December 3, 1953.

18. Defendant AEROTEC INDUSTRIES, INC. purchased four of plaintiff's man-sensitive safety apparatus Model HR 30 in May, 1956, and this defendant's Vice President observed a demonstration of an improved version (Model 0101) in 1957.

19. Defendant AEROTEC INDUSTRIES, INC. placed an order with plaintiff for a large quantity of plaintiff's Model HR 30 man-sensitive safety apparatus, but the order was apparently cancelled, and subsequently defendant placed on the market man-sensitive safety apparatus of its own manufacture.

20. In the Spring of 1958, plaintiff lost a contract to Douglas Aircraft Company for its man-sensitive safety apparatus, and defendants obtained the contract and supplied man-sensitive safety apparatus which they manufactured for Douglas DC-8 aircraft.

21. Defendants have continued to sell man-sensitive safety apparatus up to the date of the trial, and defendants threaten to continue this activity.

22. Defendants models 65A, 94, 95 and 102 are man-sensitive safety apparatus, and they are exemplified by Exhibits 13, 81, 82, 83, 84, 85, 86 and 95.

23. Plaintiff charges defendants with direct infringement of claims 7 and 9 of patent No. 2,845,233 and of claims 1 and 5 of patent No. 2,845,234.

24. These claims define in various terms a safety apparatus for preventing a seat occupant of a vehicle from being thrown from his seat; an inertia lock device adapted to be mounted on the back of the seat, including a reel and a flexible connector adapted to be coupled **[C.T. 948]** to the seat occupant and wound on the reel; an inertia member turnably movable with respect to the reel; means for coupling the inertia member with the reel; and locking means (or means for stopping rotation of the reel), with the inertia member being operable by inertia to cause the locking means to lock the flexible connector when that connector is pulled outwardly from the housing by an abnormal movement of the seat occupant.

25. Claims 1 and 5 of plaintiff's improvement patent differ from the claims of the basic patent by defining the

locking means as being operable in response to relative rotation between the reel and the inertia member.

26. Defendant's Models 65A, 94, 95 and 102 safety apparatus contain all of the structural elements of each of the aforesaid claims in the same functional relationship that is specified by each of the claims.

27. Defendants urged and their witnesses testified that their safety apparatus has a different mode of operation in that their apparatus responds solely to velocity, and not to acceleration of the seat occupant, as required by the patented apparatus. However, defendants' own patent No. 2,982,492 (Pltf's. Ex. 66) which is directed to specific details of their safety apparatus, describes defendants' apparatus as being responsive to acceleration, and it does not describe it as responding to velocity at all. Defendants' application for this patent was filed on October 30, 1958, and the patent issued on May 2, 1961, all before the present action was instituted on January 21, 1963.

28. Defendants' patent No. 2,982,492 describes the operation and function peculiar to defendants' devices in suit, Models 65A, 94, 95 and 102 (Pltfs. Ex. 127).

[C.T. 949] 29. Defendants asserted to the Patent Office in arguments seeking allowance of the patent No. 2,982,492 (Pltf's. Ex. 66) on their safety apparatus that their apparatus is responsive to acceleration. (Pltfs. Ex. 100)

30. Additional statements that defendants' apparatus responds to acceleration of the seat occupant made prior to this action are set forth in sales and technical materials issued by defendants, such as product specifications,

installation specifications, and published and copyrighted technical journals, as exemplified by Pltf's. Exs. 51, 52, 53, 54, 55, 56 and 57.

31. The acceleration responsive feature gives a more rapid locking action than velocity responsive apparatus, and this is an important safety feature and an important sales feature of the patented apparatus.

32. Defendants presented no testimony or evidence to explain why their statements prior to this action and their sales materials and publications directly contradict the testimony of their witnesses presented during the trial.

33. Force caused by acceleration of a seat occupant with respect to his seat is the primary force causing defendants' safety apparatus to lock and therefore defendants' devices are acceleration responsive within the meaning of the patents in suit.

34. Defendants' Models 65A, 94, 95 and 102 safety apparatus accomplish substantially the same result in substantially the same way as the devices of the patents in suit.

35. The structural details of defendants' apparatus which are different from the structures shown in plaintiff's patent drawings are features which are not [C.T. 950] specified one way or another in the claims in suit which define the scope of the invention and hence such difference in details does not negate infringement. Examples of such structural details are the manual lock shown for embodiments of plaintiff's patent drawings but not em-

ployed in defendants' devices, and the reversal of the teeth and the pawls in plaintiff's and defendants' devices.

36. The inventions of the patents in suit are basic with respect to man-sensitive safety apparatus which is acceleration responsive.

37. The inventions of the patents in suit are of sufficient scope to cover the elimination of many of the detailed elements shown in the patent drawings and to cover rearrangement of the elements.

38. The file histories of plaintiff's patents do not require as an element or feature of any of the claims in suit that the inertia element for the safety apparatus be separate from the locking means for the drum. Both the patented apparatus and defendants' apparatus employ inertia elements which are separate from the drum or reel. The proceedings in the Patent Office do not limit the scope of the claims in suit with respect to covering defendants' products.

39. The descriptions of the patented inventions are sufficient to enable any person skilled in the art to make and use the inventions, and they set forth the best mode contemplated by the inventors for carrying out the inventions at the time when the applications for the patents were filed.

40. The claims of plaintiff's patents are sufficiently set forth; they particularly point out and distinctly claim the subject matter of the inventions; **[C.T. 951]** and they adequately describe the patented devices.

41. The patented inventions were not known to others before the invention by the inventors of the patents in

suit nor in public use for more than one year prior to the filing of the applications for the patents in suit.

42. The inventors of the basic patent No. 2,845,233 were the first to conceive the technique of sensing the movement of a man with respect to his seat to cause him to be locked in his seat when abnormal acceleration is sensed, and the inventors were the first to follow up this concept with a model embodying the technique.

43. The named inventors of the improvement patent No. 2,845,234, Messrs. Wrighton and Cushman, jointly contributed to the invention of the improvement patent. They jointly executed the patent application which in itself is prima facie evidence that it was a joint invention, and the burden of proving to the contrary has not been met by defendants.

44. The named inventors of the patents in suit are the true inventors.

45. The applications for the patents in suit received detailed examination by the Patent Office and numerous prior patents were cited by the Patent Office in determining the proper scope for the claims of the patents. One of the prior patents is No. 2,370,921 to Sharpe which discloses an acceleration-responsive device for preventing cows from kicking when they are being milked.

46. Two of the claims in suit, Claims 7 and 9 of plaintiff's patent No. 2,845,233, were rejected by the examiner of the Patent Office as being unpatentable over the prior art patents, but the Patent Office Board of [C.T. 952] Appeals reversed the examiner and allowed these claims.

47. After plaintiff served a notice of infringement on defendant AEROTEC INDUSTRIES, INC. concerning the patents in suit, that defendant searched for prior patents and discovered several patents relating to trolley-catching devices for street cars. During the trial defendants relied upon the trolley-catching devices shown in Ham patent No. 700,763, Burdon patent No. 888,418 and Ricketts patent No. 1,393,570.

48. The prior patents showing trolley-catching devices are not as closely related to plaintiff's inventions as the prior patents considered by the Patent Office.

49. The prior patents showing trolley-catching devices are heavy, bulky devices mounted outside a street car for catching the trolley pole in the air in the event it disengages from the trolley wire and is moved vertically by a spring; and thus the trolley-catching devices are for a markedly different purpose than keeping a man in his seat in the event he is accelerated in any direction with respect to the seat. The trolley catching devices are not man-sensitive safety devices at all.

50. Trolley catching devices are not multi-directional devices whereas the patented man-sensitive safety apparatus senses the movement of a man in any direction with respect to his seat and locks the man in his seat in the event of abnormal movement in any direction.

51. Substantial redesign and reconstruction would be necessary to adapt a trolley catcher to serve as a man-sensitive safety apparatus, assuming that it could be done at all.

[C.T. 953] 52. Although the prior patents showing trolley-catching devices issued around the turn of the century, such patents or devices were not considered by the inventors of the patents in suit nor by skilled engineers designing man-sensitive apparatus for plaintiff, defendants and American Seating Company when man-sensitive safety apparatus was being first developed by these companies.

53. Before the inventions in suit only vehicle-sensitive safety apparatus was known for protecting a man in his seat in a moving vehicle while permitting the man to carry out his normal movements, and it was not known that abnormal movement of the man could be sensed to cause the man to be locked in his seat as soon as the abnormal movement starts. At the time the inventions in suit were made, it would not have been obvious to one skilled in the art of safety apparatus for protecting a man in his seat that abnormal movement of a man could be sensed to cause the man to be locked in his seat at the very outset of the abnormal movement.

54. Defendants discovered the trolley-catcher patents long before their patent No. 2,982,492 (Pltf's. Ex. 66), which describes the function and operation of their man-sensitive safety apparatus, was issued by the Patent Office, yet defendants did not call the trolley-catcher patents to the attention of the Patent Office in connection with the examination of their own patent. (Pltf's. Ex. 100)

55. Defendants presented no testimony or evidence to explain their contradictory positions concerning the

trolley-catcher patents. Prior to this action, defendants took the position that the trolley-catcher patents are not pertinent with reference to the patentability of man-sensitive safety apparatus, yet during the trial [C.T. 954] defendants contended that the trolley-catcher patents are pertinent.

56. The purpose of plaintiff's and defendants' man-sensitive safety apparatus is markedly different from the purpose of the trolley-catching devices of the prior patents and thus, these patents are non-analogous art.

57. Plaintiff's claims in suit do not read on, and are not anticipated by the trolley-catching devices shown in the prior patents because the claims require in various terms safety apparatus for preventing a seat occupant of a vehicle from being thrown off his seat, an inertia lock device adapted to be mounted on the back of a seat, a flexible connector or cable adapted to be coupled to the seat occupant within the vehicle, and means for sensing the acceleration of the flexible connector caused by forces acting on the seat occupant to retain the seat occupant in his seat in the event of an abnormal movement of the occupant with respect to the seat. These elements and features and functional relationships are not disclosed by the trolley catcher patents and thus, plaintiff's claims require elements and features and functional relationships which are not shown by the prior art.

58. The prior art cited by the Patent Office and the additional prior art trolley-catcher patents cited by defendants, taken singly or in combination, does not anticipate the inventions of the patents in suit.

59. When plaintiff proposed its man-sensitive safety apparatus to Air Force representatives, they were skeptical and doubted that apparatus which responded to movement of a man with respect to his seat would function satisfactorily. This doubt was later dispelled and large [C.T. 955] numbers of man-sensitive safety apparatus have been purchased by the Air Force.

60. American Seating Company was the sole manufacturer of vehicle-sensitive safety apparatus at the time plaintiff started marketing its man-sensitive safety apparatus. Plaintiff's sales of man-sensitive safety apparatus have increased markedly from the time it was accepted in the market, including a period when sales of manned aircraft were severely cut back, and at the same time the sales of vehicle-sensitive safety apparatus by American Seating Company declined rapidly. The man-sensitive safety apparatus was the primary cause for the decline in sales of vehicle-sensitive safety apparatus.

61. Highly qualified engineers for the American Seating Company endeavored without success for many years to develop a multi-directional safety apparatus to overcome the shortcomings of the unidirectional response of their vehicle-sensitive apparatus, and when they became aware of plaintiff's man-sensitive safety apparatus, they developed a man-sensitive safety apparatus of their own and took a license from plaintiff under the two patents in suit.

62. The inventions in plaintiff's basic and improvement patents filled a long standing want and demand in the industry.

63. The subject matter of the patents in suit was not obvious to the military services which had a great need for such safety apparatus, because the lives of pilots were being lost; it was not obvious to the highly skilled engineers of American Seating Company who were endeavoring to overcome the shortcomings of their vehicle-sensitive safety apparatus; and the Air Force was skeptical of the man-sensitive concept. The subject matter of the patents [C.T. 956] in suit was not obvious to one skilled in the art, and the inventions produced surprising results (locking a man in his seat in a small fraction of a second due to abnormal acceleration of the man in any direction by sensing the acceleration of the man with respect to his seat) using a technique which the Air Force did not think would work satisfactorily.

64. Plaintiff's claims in suit specify structural elements and functional relationships which are new and which produce a new and useful result. Saving lives of pilots and the like by sensing movement of the pilot in any direction with respect to his seat and securing him in his seat with his safety harness in the event of abnormal movement of the pilot, in a small fraction of a second after the abnormal movement starts, yet permitting normal movements of the pilot, provides a substantial contribution to the art, and the patented inventions promote the progress of science and the useful arts.

65. Plaintiff has obtained issuance of foreign patents corresponding to the basic patent No. 2,845,233 in Great Britain, France, Canada and Japan, and corresponding to the improvement patent No. 2,845,234 in Great Britain,

France, Canada, West Germany and Japan. Plaintiff has licensees in the United States under the United States patents and licensees under the foreign counterparts of these patents in France, England and Japan. Substantial royalties have been paid to plaintiff under the licenses.

66. Plaintiff is actively engaged in the manufacture and sale of man-sensitive safety apparatus and is the major supplier of this apparatus in the United States.

67. About ninety percent of the total world market for safety apparatus for protecting a man in his seat **[C.T. 957]** is now filled by the man-sensitive type safety apparatus, and the man-sensitive type has largely supplanted the prior art vehicle-sensitive type.

68. The patented inventions in a suit received wide acceptance in the military services and the commercial aircraft industry, and the inventions have achieved a high degree of commercial success in the United States and in foreign countries.

69. Plaintiff has received world-wide recognition of its contribution in its basic and improvement patents.

70. It was plaintiff's man-sensitive safety apparatus which prompted defendants to start marketing man-sensitive safety apparatus and not the trolley-catcher patents which defendants discovered after they had already started marketing the apparatus.

71. Defendants employed the essential features of the man-sensitive safety apparatus of plaintiff's inventions and wilfully and deliberately infringed plaintiff's patent rights without justification.

72. Claims 7 and 9 of plaintiff's patent No. 2,845,233 and claims 1 and 5 of plaintiff's patent No. 2,845,234 are valid and they are infringed by defendants' Models 65A, 94, 95 and 102 safety reels.

73. Every conclusion set forth in the conclusions of law which is deemed to be a finding of fact is hereby incorporated herein as a finding of fact.

[C.T. 958] CONCLUSIONS OF LAW

I

This court has jurisdiction of the subject matter of the action and of the parties to the action.

II

The patents in suit are valid.

III

Defendants have wilfully infringed the patents in suit with actual knowledge of plaintiff's patent rights.

IV

The claims of the patents in suit are entitled to broad scope with respect to man-sensitive safety apparatus which is acceleration responsive.

V

Plaintiff is entitled to damages adequate to compensate for the infringement.

VI

Plaintiff is entitled to an accounting to ascertain its lost profits and any other damages caused by defendants' infringement.

VII

Plaintiff is entitled to an injunction as follows:

(a) Defendants, their officers, agents, servants, employees and those persons, companies or corporations in active concert or in participation with them be, and each of them is hereby enjoined from making causing to be made, or offering or threatening to make, or using or causing to be used, or offering or threatening to use, or selling or offering or threatening to sell, or contributing to the making, using or selling of the apparatus patented in and by each of claims 7 and 9 of Letters Patent No. 2,845,233 and claims 1 and 5 of [C.T. 959] Letters Patent No. 2,845,234 for the remainder of the terms of said Letters Patent.

(b) Defendants, their officers, agents, servants, employees and those persons, companies or corporations in active concert or in participation with them be, and each of them is hereby enjoined from making, causing to be made, or offering or threatening to make, or using or causing to be used, or offering or threatening to use, or selling or causing to be sold, or offering or threatening to sell, or contributing to the making, using or selling of the defendants' Models 65A, 94, 95, and 102 safety reels, or any safety reels of substantially the same construction as defendants' Models 65A, 94, 95 and 102 for the remainder of the terms of Letters Patent Nos. 2,845,233 and 2,845,234.

VIII

Defendants' counterclaim for a judgment declaring plaintiff's patents invalid and not infringed is not well founded and is dismissed.

IX

Every finding set forth in the findings of fact which is deemed to be a conclusion of law is hereby incorporated herein as a conclusion of law.

Dated: July 30, 1965.

/s/ Thurmond Clarke
THURMOND CLARKE
UNITED STATES DISTRICT COURT JUDGE

[C.T. 928]

United States District Court
For the Southern District of California
Central Division

No. 63-64-TC Civil

PACIFIC SCIENTIFIC COMPANY, a corporation,
Plaintiff,

vs.

AEROTEC INDUSTRIES OF CALIFORNIA, a corporation, AEROTEC INDUSTRIES, INC., a corporation, UNIVERSAL OIL PRODUCTS COMPANY, a corporation,
Defendants.

INTERLOCUTORY JUDGMENT

This cause, having been tried before the Court, sitting without a jury, the plaintiff having been represented by its counsel, Christie, Parker & Hale, C. Russell Hale and D. Bruce Prout, the defendants having been represented by its counsel, Miketta, Glenny, Poms & Smith, William Poms, Guy P. Smith and E. Seward Stevens, and the cause having been tried and submitted for decision upon the issues raised by plaintiff's complaint, the answers of defendant thereto, and defendants' counterclaim, and the answer of plaintiff thereto, and the court having rendered an opinion on July 12, 1965 and having made its findings of fact and conclusions of law, good cause appearing therefor,

IT IS HEREBY ORDERED, ADJUDGED AND DECREED:

1. That plaintiff owns all right, title and interest [C.T. 929] in and to Letters Patents Nos. 2,845,233 and 2,845,234, together with all rights of action for infringement thereof.

2. That claims 7 and 9 of patent No. 2,845,233 and claims 1 and 5 of patent No. 2,845,234 are valid.

3. That as charged in plaintiff's complaint, defendants have wilfully infringed the patents in suit with actual knowledge of plaintiff's patent rights by making, using and selling safety apparatus designated as defendants' Models 65A, 94, 95 and 102 safety reels which embody the inventions of each of the patents, as exemplified by plaintiff's Exhibits 13, 81, 82, 83, 84, 85, 86 and 95.

4. That plaintiff is entitled to damages from defendants for the infringement pursuant to the provisions of 35 U.S.C. 284, and such damages shall be assessed on the basis of plaintiff's lost profits and any other damages caused to plaintiff by defendants' infringement.

5. (a) That defendants, their officers, agents, servants, employees and those persons, companies or corporations in active concert or in participation with them, be, and each of them is hereby enjoined from making, causing to be made, or offering or threatening to make, or using or causing to be used, or offering or threatening to use, or selling or causing to be sold, or offering or threatening to sell, or contributing to the making, using or selling of the apparatus patented in and by each of claims 7 and 9 of Letters Patent No. 2,845,233 and claims 1 and 5 of Letters Patent No. 2,845,234 for the remainder of the terms of said Letters Patent.

(b) That defendants, their officers, agents, servants, employees and those persons, companies or corporations in active concert or in participation with them be, and each of them is hereby enjoined from making, causing to be made, or offering or threatening to make, or using or causing to be used, [C.T. 930] or offering or threatening to use, or selling or causing to be sold, or offering or threatening to sell, or contributing to the making, using or selling of the defendants' models 65A, 94, 95, and 102 safety reels, or any safety reels of substantially the same construction as defendants' models 65A, 94, 95, and 102 for the remainder of the terms of Letters Patent Nos. 2,845,233 and 2,845,234.

6. That this cause be, and hereby is referred to Francis H. Lindley as Master *pro hac vice* pursuant to Rule 53 of the Federal Rules of Civil Procedure, with directions (a) to hear and determine an accounting as to plaintiff's lost profits and any other damages caused by defendants' infringement pursuant to 35 U.S.C. 284; (b) to hear all relevant evidence on the amount of damages to be assessed; and (c) to report to the court his findings of fact and conclusions of law with respect to the amount of such damages.

7. That defendants' counterclaim seeking an adjudication that plaintiff's patents Nos. 2,845,233 and 2,845,234 are invalid and not infringed is not well founded and is dismissed.

8. That plaintiff be awarded its costs of suit in the sum of $3,864.39.

Dated: July 30, 1965.

/s/ Thurmond Clarke

THURMOND CLARKE

[R. 4]

United States Court of Appeals
For the Ninth Circuit

AEROTEC INDUSTRIES OF CALIF., et al., *Appellant*, vs. PACIFIC SCIENTIFIC COMPANY, *Appellee.*	No. 20,510

[July 26, 1967]

Appeal from the United States District Court
for the Southern District of California
Central Division
(Now the Central District of California)

Before: BARNES, JERTBERG and DUNIWAY, Circuit Judges

DUNIWAY, Circuit Judge:

This is an appeal from a judgment holding certain claims of appellee's patents valid and infringed. The patents are Pfankuch, No. 2,845,233, claims 7 and 9,[1] and

[1]The two Pfankuch claims read: "7. Safety apparatus for preventing a seat occupant of a vehicle from being thrown off his seat, comprising an inertia lock device adapted to be mounted on the back of the seat, said device having a rotatably mounted reel therewithin, a flexible connector wound on said reel and extending outwardly of said device for passing over the body of the seat occupant, a yieldable resilient member coupled to said reel and tensioned so as to urge rotation of said reel in the direction to wind up the connector thereon to thereby normally maintain a light tension on said flexible connector while allowing the same to yield,

Cushman, No. 2,845,234, claims [R. 5] 1 and 5.[2] We reverse.

[R. 6] Appellants' device is described in the Spielman patent, No. 2,982,492. Pfankuch was issued July 29, 1958,

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whereby the seat occupant is permitted freedom of motion, an inertia member turnably movable with respect to said reel, means for connecting said inertia member with said reel, locking means within said device for locking said inertia member and reel against turning movement, movement of said flexible connector outwardly of said device at a rate exceeding a predetermined acceleration, due to a sudden force tending to dislodge the seat occupant, causing said inertia member to resist the turning of said reel and effect the locking of the reel and inertia member by said locking means, thus positively preventing further out- [R. 5] ward movement of the flexible connector to retain the seat occupant in his seat....

* * * *

"9. Safety apparatus adapted to be used on a moving vehicle, comprising, in combination, a supporting housing on said vehicle, a flexible connector extending from said supporting housing and adopted to engage an occupant in the vehicle, resilient reel means connected to said flexible member and carried within said housing for normally maintaining a light tension on said flexible connector while permitting the same to yield, whereby the occupant is allowed freedom of motion, an inertia member within said housing turnably mounted with respect to said reel means, means for coupling said inertia member to said reel means, locking means in said housing, said inertia member being operable by inertia to cause said locking means to lock said flexible connector positively against further movement outwardly with respect to said housing when said flexible connector is pulled outwardly of said housing at a rate exceeding predetermined acceleration, due to forces tending to dislodge the occupant from his seat, whereby the occupant is prevented from being dislodged."

[2]The two Cushman claims read: "1. A safety device for mounting in a vehicle to restrain the movement of a body within the vehicle when the body is subjected to relatively high acceleration movement relative to the vehicle comprising a cable adapted to be coupled to the body, a cable reel rotatably mounted in said device, resilient means coupled to said reel for rotating said reel in one direction to wind up said cable, said reel rotating in the other direction to unwind the cable responsive to forces exerted by a pull on the cable, an inertia member rotatably mounted in said device, said inertia member rotating in unison with said reel during rotation thereof in the unwind direction below a predetermined acceleration, said reel rotating relative to said inertia member during rotation of said reel at the predetermined acceleration

Cushman on the same day, Spielman on May 2, 1961. Strange to say, neither Pfankuch nor Cushman nor any of the prior art cited in either of them is cited as prior art in Spielman.

All three devices have the same stated objective, described in somewhat different ways in the introductory paragraphs in each patent. Typical is the following, from Pfankuch:

> "This invention relates, generally, to novel safety apparatus for use by pilots, operators, and other crew members, such as bombardiers, navigators, gunners, etc. of rapidly moving vehicles such as aircraft and automobiles, and more particularly, to novel inertia-operated apparatus for use with body harnesses which apparatus automatically functions to safely retain the pilots in their seats during crashes and the like.

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due to an abnormal acceleration of the cable, and means operated in response to the relative rotation of said reel in the unwind direction to thereby restrain movement of the body in the vehicle . . . .

* * * *

"5. A safety device for mounting in a vehicle to restrain the movement of a body within the vehicle when the body is subjected to relatively high acceleration movement relative to the vehicle comprising a cable adapted to be coupled to the body a rotatably mounted cable reel having said cable secured thereon, resilient means coupled to said reel for rotating said cable reel in a direction to wind said cable on said reel, said reel rotating in the opposite direction to unwind said cable therefrom due to forces exerted by a pull on the cable, a rotatably mounted inertia member, means for yieldably coupling said inertia member to said reel to thereby cause said member to rotate with said reel during rotation in said unwind direction below a certain acceleration, said means yielding during rotation at said certain acceleration to cause said reel to rotate relative to said inertia member, and means associated with said coupling means operated when said reel rotates relative to said inertia member for stopping rotation of the reel in said unwind direction."

> "Safety apparatus of this type have been developed over the years and comprise devices for use in conjunction with a shoulder harness which permit movement of the shoulder harness and consequently movement of the upper portion of the pilot's body during normal motions of his craft but which automatically operate to restrict movement of the shoulder harness and pilot during abnormal or violent motions of the craft. These devices have taken the form of reels or drums with a cable wound thereon, the cable being secured to the shoulder harness. The cable is reeled off the drum in response to tension on the shoulder harness and rewound on the drum when the tension is removed. During abnormal motions of the craft, the device automatically operates to lock up the reel and prevent the cable from reeling out, thus restricting the movement of the shoulder harness."

The opening paragraphs of Spielman are strikingly similar.

Each device is designed to be attached to the seat of the vehicle, and to be connected to the shoulder harness of the seat occupant. In each, the attachment is by a cord or a strap, wound on a reel housed in the device. In each, the reel is spring wound, so that when the cord or strap is pulled out, the spring is tightened and when the tension on the card or strap is released the spring causes it to be rewound on the reel. In each the reel is so designed that, when there is a sudden deceleration of the vehicle, the reel will [R. 7] lock, thus preventing further movement of the seat occupant away from his seat. As is disclosed in the Pfankuch patent, quoted above, devices that are designed to accomplish these results were not new when

appellee's patents were issued. Patents covering just such devices are in the record and were cited as prior art in Pfankuch and Cushman. These are Geohegan, No. 2,403,653, Nordmark, Nos. 2,434,119 and 2,701,693 and Heinemann, No. 2,708,555.

The "new and useful" elements, necessary to patentability (35 U.S.C. § 101), must lie elsewhere than in the foregoing combination of elements. They lie, according to appellee, in the manner in which its devices lock the reel. Each of the four prior patents mentioned above uses the force of inertia to accomplish the desired result. When the vehicle decelerates, the inertia of certain movable parts of the device causes them to move relative to other, fixed, parts, and thus to lock the reel. In its finding, the trial court described these devices as "vehicle-sensitive."

In the devices here in suit, the forces of inertia are also used, but in a different way. When a fast moving vehicle, such as an airplane, crashes or makes some sudden movement, such as hitting a down-draft, the inertia of bodies that are within it but not fastened to it will cause them to continue in the original direction of movement. Thus, in case of a crash, passengers move violently forward; in case of a drop, they may strike the roof, in case of a sudden movement sidewise, they may hit a wall or fall into the aisle. In such cases it is more accurate to say that the vehicle strikes the passenger than that the passenger strikes the vehicle. The same force would produce the same result if a dummy or a parcel were placed in a seat, and in any fast moving vehicle, such as an automobile. It is the inertial force of such a body, pulling on the cord or strap wound on the reel, that is

used to activate the locking device in the reel, in the case of each of the devices in suit. And, it is the inertial resistance of certain movable parts, connected with the reel, to sudden acceleration that causes the locking.

The trial court used the phrase "man-sensitive" to describe these devices. This anthropomorphic phrase does not add to the clarity of thought. The reels do not "sense" the movements of a man. They merely respond to physical forces when the latter are applied to the cord or strap wound on them by whatever body, animate or inanimate, may be attached to it. If it be under- [R. 8] stood that this is all that the phrase means, it can do no harm. Indeed, in the Pfankuch patent, it is stated "this novel invention may be used in connection with objects other than human beings, such as, for example, freight handling and the like." But the phrase was used by appellee's counsel and the trial court accepted it; we think that it helped to lead the court astray.

In the Pfankuch device, the reel is mounted in vertical slots so that the whole reel can move upward. By a system of gears, a flywheel or inertia member, running freely on the same spindle as the reel, is made to turn when the reel turns, the gear ratio being such that, as the patent states, "preferably for every four revolutions of the flywheel, the cable drum [reel] makes one revolution." Mounted in the side of the reel is a circular member having ratchet teeth on its circumference. When the reel is in its normal position, its axle rests in the bottoms of the slots, the reel being held in that position by its own weight and by the tension of the winding spring, which is adjustable in this respect. Mounted above

the reel is a spring-controlled pawl, or dog. When the cable on the reel is pulled out slowly and gently, as by ordinary movements of the seat occupant's body, the reel unwinds without rising in the slots. When there is a sudden heavy pull on the reel, causing it to accelerate very rapidly, the inertia of the flywheel resists the acceleration, with the result that the reel is lifted in the slots and the ratchet teeth engage the dog and lock the reel, thus preventing payout of the cable.

The Cushman patent shows a similar device, but one that is somewhat more sophisticated. The reel is mounted and held in a fixed position. Mounted with it is a flywheel which can move about five degrees in relation to the reel, at which point it must engage and rotate with the reel. When there is a sudden acceleration, the inertia of the flywheel moves it through this angle relative to the reel and causes a mechanism to operate which releases a spring mounted pawl that then engages the teeth mounted on the flywheel and locks the reel, as occurs in the Pfankuch type of reel. Cushman was issued as an improvement patent on Pfankuch.[3]

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[3]We quote the following rather Rube Goldbergian description of what happens:
"When the sharp jerk occurs on the cable 7, it tends to rotate the cable reel 19 at a rapid rate of acceleration. The drive link 22 tends to rotate [R. 9] the ratchet wheel 32 along with the cable reel but this ratchet wheel is made of a relatively heavy metal mass, and it tends to remain stationary when the force is first applied. This tendency of the ratchet wheel to remain stationary overcomes the spring-loading force on the tripping-lever system. There is, therefore, a relative rotational movement between the cable reel 19 and the ratchet wheel 32 and this causes the drive link 22 to pivot or turn in a clockwise direction as viewed in Fig. 2. The inner end of the drive link 22, in passing through its arc of movement, moves the base leg of the rock shaft 45, causing the rock shaft to rock or cant on its flange 43 and ride up within the shaft 18. It is better

[R. 9] The appellants' device produces the same basic result as do the Pfankuch and Cushman devices. The reel is encircled by a ring having ratchet teeth on its interior circumference. Mounted in slots on the end of the reel are two dogs, or pawls, held in place by springs. When so held, their position is such that they do not engage the interior teeth of the surrounding ratchet ring. They are pivoted, however, and can move within the slots. The tension of the springs is such that when the reel is activated by ordinary movements of the seat occupant, the dogs do not move relative to the reel. But when a sudden acceleration of the reel occurs, the inertia of the dogs, or pawls, causes them to move relative to the reel, at which point their tips engage the teeth of the ratchet and lock the reel.

The appellants' principal attack on the judgment is based upon the contentions that the various elements of the Pfankuch and Cushman patent claims are anticipated by prior art and that they fall within the limiting language of 35 U.S.C. § 103.[4] The prior art patents upon which appellants principally rely fall into three categories.

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shown in Fig. 5. The pin 46 is thus made to move to the right as viewed in Fig. 3, tilting the rocker arm 47. This movement of the rocker arm 47 moves the pin 52 to the left as viewed in Fig. 4, thus rotating sear 53 about its pivot pin 54 against the tension of spring 55. The sear button 53 is thus disengaged from the finger 56 and the pawl 57 rotates under pressure of spring 59 to engage the ratchet teeth and thus locks the ratchet wheel 32."

[4] "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

[R. 10] First, there is the Sharpe patent, No. 2,370,921. This discloses the idea of a spring operated reel having ratchet teeth on its circumference which are caused to engage with a pawl when there is a sudden pull or acceleration of the cord wound on the reel. This reel moves downward in slots, being held in its normal position by a spring, the tension of which permits gentle or slow unwinding but is insufficient to resist the inertia of the reel when it is suddenly accelerated. Such sudden acceleration causes the reel to move downward in the slots against the tension of the spring and to engage the equivalent of a pawl, or dog. The purpose of this reel is to prevent a cow from kicking over the milk bucket when she is being milked, the cord being attached to the cow's leg, and it was cited as prior art in Pfankuch, but not in Cushman. Thus there is nothing new or patentable about a reel which can be moved into its locking position by reason of its inertial resistance to sudden acceleration.

Second, there are the Geohegan, Nordmark and Heinemann patents mentioned, *supra*. They show that there is nothing new about the idea of using a spring wound lockable reel in connection with the harness holding a person in his seat in a moving vehicle, or in using inertial force to cause the reel to lock.

Third, there are patents on an old and familiar device, the trolley catcher. These patents are Fairchild, No. 657,342 of 1900, Ham, No. 700,763 of 1902, Burdon, No. 888,418 of 1908, Porter, No. 1,122,420 of 1914 and Ricketts, No. 1,393,570 of 1921. None of these was cited in either Pfankuch or Cushman. The trolley catcher device is one that used to be familiar to most Americans and can still

be seen in operation in a few of our cities. It consists of a reel on which is wound a cord, the free end of which is attached to a trolley pole. The trolley is held against the overhead wire on which it runs by a heavy spring mounted on top of the vehicle to which it is attached. The trolley catcher maintains a slight tension on the upper end of the trolley pole, pulling against the pressure of the spring that holds the trolley against the wire, by virtue of a rewind mechanism on the reel of the trolley catcher.[5] The height of the trolley [R. 11] wire above the vehicle is not constant, and the distance of the end of the trolley pole from the vehicle thus must vary as the vehicle moves. Variation in this distance also occurs when the trolley swings to the side as the vehicle turns. The rewind mechanism permits the cord to be pulled off the reel when the distance increases and winds it up when the distance decreases. The trolley may jump off the wire, and when it does, the spring on which it is mounted causes it to fly up. Each device prevents this by causing the reel to lock when this occurs. The locking is a response to the sudden acceleration of the reel. In all of the devices, a dog, or pawl, is caused to engage ratchet teeth. In Fairchild, the teeth are on the reel and the dog is on the housing, as in appellee's devices; in the other four the teeth surround the reel and the dog is on the reel, as in appellants' device. In all except Fairchild, there is a member movably mounted on the reel, which revolves with it in normal use, but the inertia of which causes it to move relative to the reel in response to sud-

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[R. 10] [5]In all of the trolley catcher patents except Burdon, the rewind is by a spring; in Burdon, the rewind is by a rope, wound on the reel and activated by a weight.

den acceleration, as in all three of the devices in suit. In each such case, the operation of the inertial element causes the dog to engage the teeth and thus to lock the reel. In one version of Ham, as in appellants' device, the dog itself is the part the inertia of which causes the movement into locking position. In the preferred version of Ham, and in Burdon, Porter and Ricketts, there is a separate part, which is movably connected to the reel and supplies the inertia to produce locking in response to acceleration, as in Pfankuch and Cushman. Both of the latter devices embody what is in substance a flywheel. So does Porter.

Let us assume that the Ham device is attached to the rear of an airplane seat and to the occupant's harness just as in the patents in suit. In that case, to use Claim 1 of Pfankuch (*supra,* n. 1), we would have an inertia lock device mounted on the back of the seat, having a rotatably mounted reel therewithin, a flexible connector found on said reel and extending outwardly [to the harness which is] for passing over the body of the seat occupant, a yieldable resilient member coupled to said reel and tensioned so as to urge rotation of said reel in the direction to wind up the connector thereon to thereby normally maintain a light tension on said flexible connector while allowing the same to yield, whereby the seat occupant is permitted freedom of motion, an inertia mem- **[R. 12]** ber turnably movable with respect to said reel, means for connecting said inertia member with said reel, locking means within said device for locking said inertia member and reel against turning movement, movement of said flexible connector outwardly of said reel at a rate exceeding a predetermined acceleration due to a sudden

force tending to dislodge the seat occupant, causing said inertia member to resist the turning of said reel and effect the locking of the reel and inertia member by said locking means, thus positively preventing further outward movement of the flexible connector to retain the seat occupant in his seat.

One can go through the same analysis, with the same result, as to each of the other claims of Pfankuch and Cushman that are in suit, as well as with Spielman, and with each of the other trolley catchers. Nevertheless, the trial judge distinguished the trolley catcher patents, on several grounds. None, we think, has merit.

One ground is that the trolley catchers are not as closely related to appellee's inventions as the prior patents considered by the Patent Office, and that the trolley catcher patents lie in a non-analogous art and are therefore not pertinent prior art. In support of these findings, appellee points to the fact that its devices are primarily designed to hold a man in his seat, while the trolley catcher is designed to stop the upward movement of a trolley pole in the air. As the trial judge put it, the trolley-catching devices are for a markedly different purpose than keeping a man in his seat in the event he is accelerated in any direction with respect to the seat. In this connection, the court said: "The trolley catching devices are not man-sensitive safety devices at all." This last statement is true, but it is, as we have already pointed out, equally true of the devices in suit. The trial judge also found that the trolley catcher devices were not considered by the inventors of the patent in suit nor by the skilled engineers designing "man-sensitive" apparatus

for appellee, appellants or American Seating Company when "man-sensitive" safety apparatus was being developed by these companies.

But surely if patents relating to reels on rope fire escapes (Scheuer, No. 1,037,333, 1912; Caouette, 1,308,480, 1919); fishing reels, (Foss, No. 1,744,461, 1923; Rutledge, No. 2,324,324, 1941) are pertinent art, having been so cited in Pfankuch or Cushman or both, presumably because they involve reels that can be locked or controlled by acceleration activated inertia members, the trolley [R. 13] catchers are equally pertinent. And for the life of us we cannot see why the Sharpe patent, which is designed to keep a cow from kicking over the milk pail, is valid prior art if the trolley catchers are not. Like it, they embody the same basic concept—a spring-wound reel which can be caused to lock up when it is suddenly accelerated, the locking mechanism being operated by the inertia of a member built into the reel for that purpose (in Sharpe, the reel itself).

Appellee cites and relies upon our decision in *Stearns v. Tinker and Rasor,* 9 Cir., 1955, 220 F.2d 49 at 56-7. But we think that the test there laid down, when applied here, supports the appellants' position rather than that of appellee. We there said:

> "The rule laid down by many of the authorities is that whether arts or uses are analogous depends upon the similarity of their elements and purposes. It is said that if the elements and purposes in one art are related and similar to those in another art, and because and by reason of that relation and similarity make an appeal to the mind of a person having mechanical skill and knowledge of the pur-

> poses of the other art, then such arts must be said to be analogous; and, if the converse is true, they are non-analogous arts."

As we have pointed out, the elements of the trolley catcher patents are strikingly similar to those of the appellee's patents. So are their purposes: to provide, in a spring rewound reel, free movement of the cord from the reel under a normal load, plus locking under unusual acceleration. See *Hall v. Wright,* 9 Cir., 1957, 240 F.2d 787, 792; *Brown v. Piper,* 1875, 91 U.S. (1 Otto) 37; *Page v. U.S. Divers Co.,* D.C.S.D. Cal. 1964, 235 F.Supp. 554, aff'd 9 Cir., 1966, 361 F.2d 478.

We cannot believe that, if appellee's skilled engineers, knowing nothing at all about trolley catchers or the trolley catcher patents, had devised, for holding a man in his seat in an airplane, the precise type of reel and mechanism described, say in Ham, they could get a valid patent on it. Yet that is what appellee's argument amounts to. As the Supreme Court said in *Graham v. John-Deere Co.,* 1966, 383 U.S. 1, at p. 36:

> "It is also irrelevant that no one apparently chose to avail himself of knowledge stored in the Patent Office and readily available by the simple expedient of conducting a patent seach—a prudent and nowadays common preliminary to well [R. 14] organized research. *Mast, Foos & Co. v. Stover Mfg. Co.,* 177 U.S. 485 (1900)."

Indeed, appellee's theory would permit it to get its patents even though it had actually used the trolley catcher patents in devising its "man-sensitive" reels. One major purpose of the patent law is to make freely available to

the public whatever is disclosed in the patent, once it has expired. Appellee's argument flies in the teeth of that purpose.[6]

The trial court also found that the trolley catchers are heavy and bulky devices, and that substantial redesign and reconstruction would be necessary to adapt a trolley catcher to serve as a "man-sensitive" safety apparatus. But these distinctions do not confer patentability over the prior art. Neither reducing the size nor changing the materials used, nor modifying tolerances, weights or balances to adapt the devices to the more rigorous and precise demands of an airplane safety device would constitute the kind of invention that the patent laws are designed to protect. (*Cf.* 35 U.S.C. § 103, *supra*, n. 4).

The trial court further found that the trolley catchers are not multi-directional devices whereas the patented "man-sensitive" safety apparatus "senses the movement of a man in any direction with respect to his seat" and locks the man in his seat in the event of abnormal movement in any direction. This finding has no support in the evidence. Nowhere in the claims in suit is there any reference to this so-called "multi-directional" feature. Moreover, in the case of the trolley catchers, as in appellee's devices, the cord emerges from a hole or hub in the casing of the reel, and it makes no difference whether the cord is pulled straight out or at an angle. What causes the reel to lock is acceleration, regardless of the angle at which the cord is pulled.

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[6] See *General Electric Co. v. Jewel Incandescent Lamp Co.*, 1945, 326 U.S. 242, 249; *William T. Alvarado Sales Co. v. Rubaloff*, 9 Cir., 1959, 263 F.2d 926, 928; *Griffith Rubber Mills v. Hoffar*, 9 Cir., 1963, 313 F.2d 1, 3.

Appellee seems to assert that appellants are estopped to assert the trolley catchers as prior art because appellants knew about them when they obtained the Spielman patent, but did not cite them to the Patent Office. (See *Admiral Corp. v. Zenith Radio Corp.*, 10 Cir., 1961, 296 F.2d 708, 716-17). While this might, as indicated in the cited case, affect the validity of Spielman, a ques- [R. 15] tion not before us, we do not think that it can be used to sustain the validity of Pfankuch or Cushman, with which appellants had nothing to do. The public has too great an interest in the validity of patents to permit the sort of "estoppel" that appellee urges. *Cf. M.O.S. Corp. v. John I. Haas, Co.*, 9 Cir., 1967, 375 F.2d 614, 616, and cases there cited.

We think it clear that, if the trolley catcher reels had been designed later than the Pfankuch and Cushman devices, the claims here in suit would read directly on such trolley catcher reels. It is settled that "that which infringes, if later, would anticipate, if earlier." *Knapp v. Morss*, 1893, 150 U.S. 221, 228; *Sperry Rand Corp. v. Knapp-Monarch Co.*, 3 Cir., 1962, 307 F.2d 344, 348. Thus the trolley catchers must be held to anticipate the Pfankuch and Cushman claims that are here in suit.[7]

Moreover, we cannot believe that, if appellee's skilled engineers had considered the trolley catchers when they were working on what became the Pfankuch and Cushman devices, they would not have at once realized the relevance of those earlier devices to the problem at hand. At the least, the claims in suit fall under the ban of

[7]We express no opinion as to the validity of other claims in these patents.

35 U.S.C. § 103, *supra*, n. 4. See *Graham v. John Deere & Co., supra; M.O.S. Corp. v. John I. Haas Co., supra,* at 375 F.2d 620, and cases there cited.

Finally, appellee relies heavily upon the presumption of validity that attends a patent, and upon commercial success of its patented devices. The presumption, however, is insufficient in the face of pertinent prior art patents not considered by the Patent Office. *Jacuzzi Bros., Inc. v. Berkeley Pump Co.*, 9 Cir., 1951, 191 F.2d 632, 634. And commercial success, while pertinent in considering whether the invention is novel, is insufficient to sustain a patent that is clearly invalid. *Graham v. John Deere & Co., supra,* at 383 U.S. 17-18, 35-36; *Great A & P Tea Co. v. Supermarket Equipment Corp.*, 1950, 340 U.S. 147, 153; *Monroe Auto Equipment Co. v. Superior Industries, Inc.*, 9 Cir., 1964, 332 F.2d 473, 480.

The judgment is reversed, with directions to enter a judgment dismissing the action.